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Female labour force participation in Greece: developments and determining factors*

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1. Introduction

During the first half of 2005 around 57% of women aged between 15 and 59 participated in the Greek labour market.[1,2] The corresponding figure for the European Union of 15 Member States (EU-15)[3] was around 67%. The female participation rate[4] in Greece has always been lower than that in the EU-15 and its recent increase is therefore encouraging. Given, however, that participation is on an upward trend in the other EU-15 countries too, the remaining gap is still significant.[5]

All developed countries (see, *inter alia*, OECD 2005a and European Commission, 2005b) acknowledge the need for welfare improvement through *inter alia* the increase in per capita income, poverty reduction, the creation of more favourable condi-

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1 Calculations are based on Eurostat data. The participation rate in the labour market of a specific age group is defined as the ratio of those economically active (employed and unemployed) in this age group to the respective population. The employment rate, on the other hand, is defined as the ratio of those employed to the population. In the first half of 2005, the female employment rate, for women 15 to 59 years old, was 48.1% in Greece and 60.6% in the EU-15.

2 Participation rates in the current paper, in general, refer to the age group up to 59 years old, since the official retirement age for women in Greece is 60. In some instances, however, calculations refer to women up to 64 years old since more detailed data were not available.

3 These are the 15 Member States prior to the May 2004 enlargement.

4 OECD data (2005d) show that in Greece, as in Italy and Spain, the participation rate of women in the entire period 1985-2004 was lower than in most EU-15 countries.

5 According to OECD data, the difference in the participation rate of women 15-64 years old between Greece and the EU-15 was 12.1 percentage points in 1990 and 8.7 percentage points in 2004 (OECD, 2005c).

tions for the upbringing of children[6] and the promotion of gender equality, all of which necessitate an increase in female labour participation. Indicative of the rise in income that the increase in female participation can lead to is the fact that the discrepancy in the labour force participation rate can partly explain the gap in per capita income between Greece and the EU-15.[7]

Furthermore, the projected deterioration of the old-age dependency ratio[8] in Greece (from 26.4% in 2004 to 35.5% in 2025, see Eurostat 2005a) means that an increase in employment is necessary to cover the elevated pension expenditure to follow from the rise in the number of pensioners.

Two questions arise at this point: *first*, why is the participation rate of women in Greece lower than that in the EU-15 and *secondly*, how can this rate be increased. This paper makes a first attempt to address these issues. To this effect time-series developments (using mainly Population Census data) for Greece are studied, the institutional setting in Greece is compared to that in other EU-15 countries, while cross-sectional data from the 2001 European Community Household Panel (ECHP) are used to estimate a probit model of female labour market participation.[9]

The analysis suggests that the participation of women in the Greek labour market has undergone both a quantitative and a qualitative change over time. Institutional, cultural and economic factors contributed to the increase in female labour participation in Greece after 1980. A comparison of the participation rates of different cohorts shows an increase in the participation of all age groups except those between 15 and 19 years old and those between 60 and 64 years old. This quantitative change has been accompanied by a qualitative improvement in the position of women in the labour market as their education level rose. Despite the increased female participation rate, however, a discrepancy with the rate in the EU-15 remains. The negative correlation between the number of children and the participation rate evidenced by the sample used here, in combination with the relative shortage of childcare facilities in Greece leads to the conclusion that an improvement in these could enhance labour participation. Furthermore, comparisons with other European countries suggest that certain features of the operation of product markets (e.g. the extent to which administrative burdens hinder entrepreneurship) have a negative impact on job creation, especially regarding part-time jobs.

It should be stressed from the outset that the study of female labour participation involves issues relating to both labour supply and labour demand and that some variables cannot be thought of, at least over a long time horizon, as exogenous (e.g. fertility). Furthermore, this paper looks mainly at the supply side and does not study the issue of female

6 Recent economic literature (see, *inter alia* Kamerman *et al.*, 2003 and Waldfogel *et al.*, 2002) on the issue of the impact of maternal employment on the cognitive and emotional development of children and on child poverty suggests that maternal employment is beneficial for children over 3 years old, but the results are inconclusive for younger children.

7 More specifically, the 25 percentage point gap in per capita income between Greece and the EU-15 in 2004 was made up of a 14 percentage point gap in labour productivity and an 11 percentage point gap in labour market participation (see Nicolitsas, 2005).

8 The elderly dependency ratio is defined as the ratio of the number of persons over 64 years to the whole population.

9 The *European Community Household Panel* contains data from a survey conducted in most Member States on an annual basis for 8 years between 1994 and 2001. A concise description of this survey can be found at the following web address http://forum.europa.eu.int/irc/dsis/echpanel/info/data/information.html. A significant revision of the questionnaire and of the survey sample design took place after 2001; the new survey is known as the *Statistics on Income and Living Conditions (SILC)*.

Table 1
Female labour force participation rate by age group, 1961-2001
(Percentages)

Age group	1961	1971	1981	1991	2001
15-19	46.8	28.7	23.3	17.4	11.8
20-24	52.2	37.1	39.3	48.8	52.1
25-29	43.6	32.7	37.7	54.5	67.0
30-34	38.6	30.7	33.7	51.3	64.3
35-44	37.1	30.5	30.9	44.6	60.2
45-54	34.5	28.1	27.3	29.4	45.7
55-59	27.3	–	20.0	17.1	26.0
60-64	21.0	–	13.4	10.2	12.8
15-59	40.3	–	30.3	37.9	49.6
15-64	39.0	29.1	29.1	35.2	46.2

Source: National Statistical Service of Greece (NSSG), Population Censuses, 1961-2001.

unemployment. The very high unemployment rate amongst women, however, which in the first half of 2005 was more than double the male unemployment rate, means that labour demand should also be analysed. Additionally, the paper makes no attempt to estimate the extent of undeclared work amongst women in Greece.

The rest of this study is organised as follows: the next section looks at developments regarding female labour participation in the period 1961-2001. The third section examines economic, social and institutional factors which have been proposed to explain differences in participation rates between Greece and the EU. The fourth section presents the results from the estimation of a probit model of female labour participation. Finally, the fifth section summarises the findings.

2. Female participation in the Greek labour market, 1961-2001

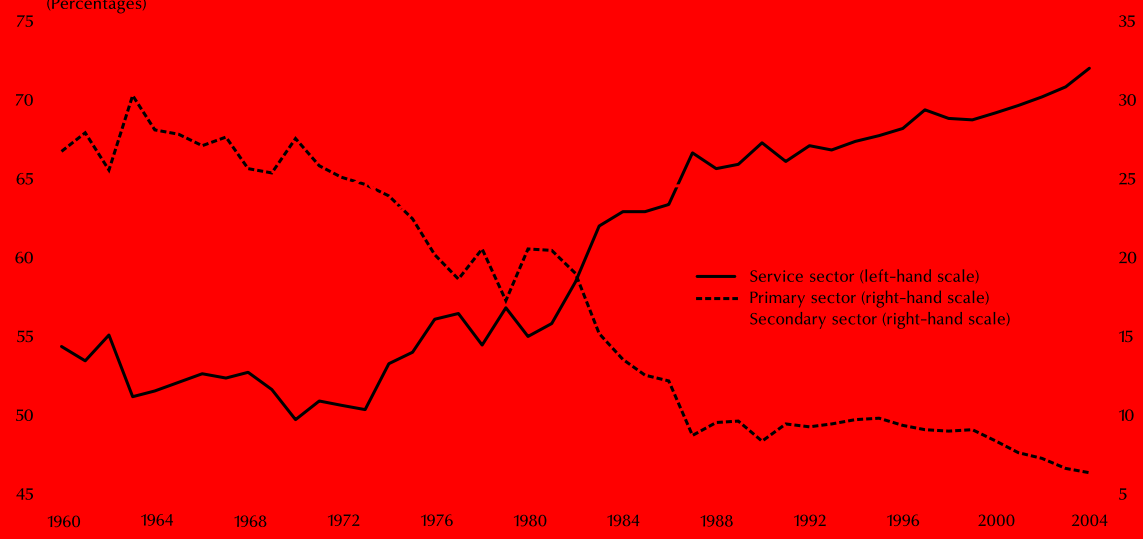
Despite the currently low female labour participation rate in Greece, a substantial improvement took place over the last few decades. Very schematically, the period after 1960 can be divided into two sub-periods; during the first twenty years (1961-1980) the overall female participation rate decreased by around 10 percentage points, while during the period 1981-2001 the rate increased by around 20 percentage points (from 30.3% in 1981 to 49.6% in 2001, see Table 1). These changes, which have not been homogeneous across age groups and regions, reflect variations in the composition of economic activity together with developments of a social and institutional nature.

Changes in the composition of economic activity

Changes in the composition of economic activity relating to the contraction of the primary sector, the country's industrialisation in the 1960s and 1970s and the rapid expansion of the service sector (see Chart 1) had a significant impact on female employment.

More specifically, in 1961 around 4 in 10 women participated in the labour market. The proportion in rural areas reached 6 in 10 women (see Table 2).

Chart 1
Composition of economic activity: gross value added of individual sectors
(Percentages)



Sources: Ministry of National Economy (1998) and NSSG, National Accounts.

Table 2
Female labour force participation rate by degree of urbanisation, 1961-2001
(Percentages)

Age group	1961	1971	1981	1991	2001
Urban and semi-urban areas					
15-59	–	–	28.6	39.6	50.2
15-64	27.5	23.3	27.2	36.7	46.9
Rural areas					
15-59	–	–	34.9	32.9	47.9
15-64	55.1	40.6	34.1	31.0	44.1

Source: NSSG, Population Censuses, 1961-2001.

Between 1961 and 1981, however, the significant decrease in labour demand in the primary sector, as a result of, *inter alia*, an improvement in the sector's productivity (see, Panourgias, 1978 and Psacharopoulos, 1983), led to lower female labour force participation especially in rural areas. The migration from rural to urban areas (see, Glytsos, 1991), where participation rates were lower, also contributed to the decline of the overall female participation rate.[10]

Despite its expansion between 1961 and 1981, the secondary sector did not absorb the women who left the primary sector. The expansion of the service sector, however, from 1981 onwards led to a substantial increase in the female participa-

10 Indicative of the urbanisation that took place between 1961 and 1981 is the fact that while in 1961 around 56% of the population resided in urban and semi-urban areas, this percentage reached 70% in 1981.

tion rate. This was even more pronounced in the 1990s due to the increasing substitution of typically household-provided services by the provision of these same services by the market.

Institutional developments

In addition to economic developments, the second half of the 1970s witnessed important institutional changes that created favourable conditions for the participation of women in the labour market. More specifically, the 1975 Constitution includes a clause stipulating that "All workers, independently of gender or other discrimination have a right to equal payment for work of equal value" (Article 22, paragraph 2, as restated in the 2001 Constitution). Between 1975 and 1978 the minimum wages of women gradually converged to those of men. In compliance with the National General Collective Agreement of 26 February 1975, complete convergence was achieved on 1 March 1978.

Reforms continued in the 1980s with an extensive revision of family law in 1983[11,12] and the ratification in 1985 of Convention 156 of the International Labour Office (ILO)[13] with the aim of reconciling family life with professional obligations (see Petroglou, 2000). Of course, innovations of an institutional nature are ongoing and take place not only in Greece but also in other parts of Europe with the aim of dealing with the shortcomings of the legislation on gender equality. In this spirit, the 2001 Constitution was amended to include the following clause "The state provides for the abolition of the inequalities that exist in practice, especially against women." (paragraph 2 of Article 116), while the Optional Protocol of Convention 156 of the ILO was also ratified in 2001.[14] Furthermore, three European Union anti-discrimination directives were recently transposed into national law. Two of these (86/378/EC and 96/97/EC)[15] concern the equal treatment of men and women in occupational social security schemes, while the third (97/80/EC)[16] concerns the transfer to the accused of the burden of proof in cases of gender discrimination. The results of legal interventions are usually not evident immediately and the impact of policies against gender discrimination appears typically to be more evident in remuneration figures rather than in participation rates (see, for example, Jaumotte, 2003).[17]

Notwithstanding this qualification, the labour participation rate of married women in Greece, which were the main target group of these institutional interventions, grew during the period

11 Law 1329/1983 amended the Civil Code and provided for *inter alia* the contribution of both spouses to meeting family needs, the arrangement of married life so that it does not obstruct the professional development of both spouses, the retainment after marriage of a woman's maiden surname in her lawful relations.

12 Indicative of the significance of this change is the assessment by Marangopoulos (1986) that this law revoked the patriarchal family and replaced it with one where both spouses share in child care.

13 The Convention was ratified by Law 1576/1985 "Ratification of the United Nations Convention on the Elimination of all Forms of Discrimination against Women". The Convention asks that national policies should enable individuals with family responsibilities to exercise their right to work without being discriminated against and without conflict between their family and employment responsibilities. Furthermore, the state should provide for vocational guidance and training so that individuals with family responsibilities become better integrated in the labour force and are able to re-enter it after an absence due to these responsibilities.

14 The protocol was ratified by Law 2952/2001 "Ratification of the optional protocol for the elimination of all forms of discrimination against women" (Government Gazette A 248/22.10.2001).

15 Presidential Decree 87/2002 (Government Gazette A 66/4.4.2002).

16 Presidential Decree 105/2003 (Government Gazette A 96/23.4.2003).

17 See Kanellopoulos and Mavromaras (2002) for evidence on the decrease of the gender pay gap in Greece during the first half of the 1980s.

Table 3
Female (20-59 years old) labour force participation rate by marital status, 1981-2001
(Percentages)

Year	Married	Single	Widowed/divorced	Total
1981	25.1	60.3	41.9	31.3
1991	34.8	63.2	48.2	40.7
2001	49.7	66.1	53.7	53.9

Source: NSSG, Population Censuses, 1981-2001.

1981-2001 more than the overall female participation rate (see Table 3). This increase in the participation rate of married women was accompanied, and perhaps influenced, by the decline in fertility. So, while in 1981 the average number of children that would be born alive to a woman between 15 and 49 years old was 2.1 children, in 2004 this had decreased to just 1.3 (Eurostat, 2005b).[18]

The quality dimension of the developments

Changes in the female participation rate after the 1960s, as already mentioned at the start of this section, have not been homogeneous across all age groups. Two are the main differences: *first*, for women over 44 years old the extent of the increase in participation (after 1981) decreases with age and, *secondly*, the participation of women between 15 and 19 years old shows a secular decline.

Regarding women over 44 years old, the lower increase in their participation rate is partly due to the establishment of special provisions for the early retirement of certain groups of workers (e.g. mothers of juveniles).[19]

The second development reflects the rapid increase after 1960 in the demand for education and the consequent secular decline of youth (both male and female) participation in the labour market (see Table 1 and Table A1 in the Appendix). The increased participation in education, which for the period 1961-71 is also documented in Panourgias (1978), is due to the higher standard of living together with other developments of a social nature (Psacharopoulos and Kazamias, 1985) and had an impact on the educational standards of employees and of the population as a whole. This is clear from Table 4 which presents data on the highest educational attainment of the female population. According to the 2001 population census, only around 8% of women between 55 and 59 years old held a university degree in 2001, while the respective figure for women 25 to 29 years old was around 26%. Comparing the educational attainment of women to that of men (presented in Table A2 in the Appendix), it is clear that women have progressed further not only because they have covered more ground than men, since they started off with a more limited

18 According to Eurostat "The total fertility rate is defined as the average number of children that would be born alive to a woman during her lifetime if she were to pass through all childbearing years conforming to the age-specific fertility rates of a given year" (Eurostat, 2005b, p. 2).

19 The Committee for the Examination of Long Term Economic Policy in its 1997 report (known as the Spraos report) states that "The average age of retirement at IKA (the main social insurance fund) shows a slight downward trend in the last 15 years." (p. 53).

Table 4

Highest education level[1] of the female population,[2] by age group, 2001

(Percentages)

Age	No education	Pre-primary education	Primary education	Lower secondary education	Upper secondary education	Post-secondary education	Tertiary education	Total
70-74	14.3	27.9	43.3	2.8	8.9	0.5	2.3	100.0
65-69	15.7	27.3	39.1	3.3	10.9	0.6	3.1	100.0
60-64	8.9	19.3	48.5	4.0	13.6	0.9	4.8	100.0
55-59	4.0	9.4	55.5	4.7	17.2	1.5	7.7	100.0
50-54	2.1	4.0	53.0	6.0	21.0	2.4	11.5	100.0
45-49	1.5	2.0	41.4	8.2	27.8	3.7	15.4	100.0
40-44	1.3	1.2	33.7	8.8	33.1	4.1	17.8	100.0
35-39	1.2	0.8	23.3	12.3	35.6	4.3	22.5	100.0
30-34	1.1	0.6	14.2	12.7	38.3	6.7	26.4	100.0
25-29	1.1	0.5	9.6	11.5	40.4	11.1	25.8	100.0
20-24	1.1	0.5	7.7	9.2	56.2	14.0	11.3	100.0
15-19	0.8	0.5	9.7	50.4	36.9	1.7	0.0	100.0

1 Following the International Standard Classification of Education (ISCED) 1997.
2 The information in this table refers to the female population as a whole and not just to labour force participants.
Source: NSSG, Population Census, 2001.

Table 5

Distribution of employed women (15-64 years old) by employment status, 1971-2001

(Percentages)

	Employers	Self-employed	Unpaid family members	Employees	Total
1971	1.0	12.0	59.7	27.3	100.0
1981	1.0	11.8	29.1	58.1	100.0
1991	4.3	18.2	12.1	65.4	100.0
2001	8.0	10.9	10.7	70.4	100.0

Source: NSSG, Population Censuses, 1971-2001.

presence in the higher education levels, but also because nowadays the percentage of women between 24 and 34 years old who are university graduates is higher than that for men.

The improvement in the education level of women who participate in the labour market is reflected in the improvement in the positions they occupy. The typical woman worker today is more likely to be an employee in contrast to the woman in the 1970s who was more likely to be an unpaid family member (see Table 5). This change partly reflects the fact that the percentage of employees, both men and women, in total employment has increased but the change has been more pronounced for women (see Table A3 in the Appendix). At the same time there is an increase in the percentage of women in occupa-

Table 6

Occupational distribution of female workers[1], 1961-2001

(Percentages)

	1961	1971	1981	1991	2001
Occupations that typically demand a higher level of education					
Professional and technical (1)	3.7	7.1	14.2	21.1	31.4
Service and sales (2)	10.2	14.5	18.6	24.4	17.5
Clerical (3)	3.7	9.1	16.5	19.0	16.3
Managerial (4)	0.2	0.2	0.9	4.3	7.0
(1)+(2)+(3)+(4)	17.8	30.9	50.2	68.8	72.2
Other occupations					
Craft, operatives and non-farm workers (5)	13.6	15.8	17.5	14.9	12.9
Farm workers (6)	68.6	53.3	32.3	16.3	14.9
(5)+(6)	82.2	69.1	49.8	31.2	27.8

1 Refers to all age groups.
2 Due to changes in occupational classifications over time we have tried to make them consistent. Nevertheless, the distributions are not entirely comparable over time.
Source: NSSG, Population Censuses, 1961-2001.

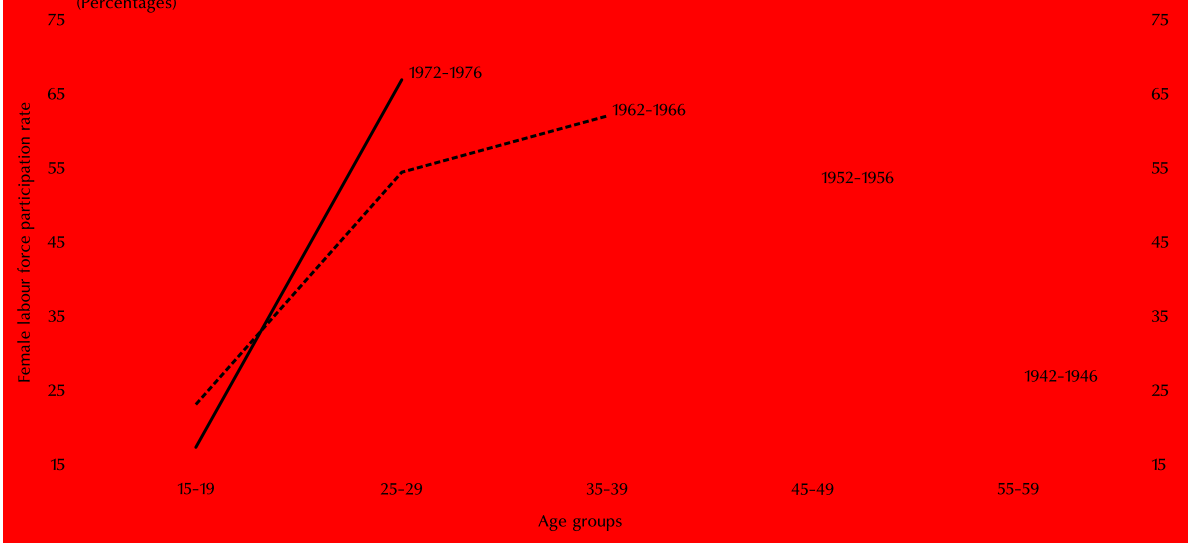
tions for which higher skills are typically needed (see Table 6).[20]

Comparisons across cohorts

The data in Table 1 can be presented by a bell-shaped curve; the participation rate increases up to the age of 25-29 and then gradually decreases. These data, however, do not reveal the extent to which this pattern reflects customs and preferences of specific cohorts and the extent to which it reflects changes related to life cycle developments of the same individuals. So, for example, the lower rate of participation of 55-59 year old women in 2001 (26%) compared to that of 45-54 year old women (46%) is due both to the retirement of certain women in the first group and to the fact that the cohort of women born between 1942 and 1946 participated, during their entire potential working life, to a lesser extent in the labour market compared to those born between 1947 and 1956. For policy purposes (e.g. in order to introduce incentives for women to remain in the labour market) it is very important to make this distinction. In the absence of data that follow the *same women* over long time periods, population census data are used here. Chart 2 shows the participation rates for women born in 4 different time periods; between 1942 and 1946, between 1952 and 1956, between 1962 and 1966 and between 1972 and 1976. The last observation on each line refers to the participation rate of the respective cohort in 2001. This chart confirms the decline in the participation rate of younger women and the increase in the participation rate of all other age groups. More importantly, however, this chart provides information regarding the pattern of participation of women in the same cohort during their life-time. So, for example, for the cohort born between 1942 and 1946, and which

20 Due to changes in the definitions of occupations over time, comparisons of classifications over time are not entirely compatible. Table 6 aims to illustrate the general tendency of an increased participation of women in occupations that usually demand higher skills.

Chart 2
Female labour force participation rate by age group and cohort
(Percentages)



Source: NSSG, Population Censuses 1961-2001.

therefore was between 15 and 19 years old in 1961, there is a slight decrease in the participation rate up to the ages of 35-40 and then a marginal increase until retirement. For the cohorts born after 1952 the data show that there is no decline in the participation rate during the family-bearing years. This pattern, but with higher participation rates, is also observed in other developed countries.[21] This observation together with the low participation rate reveals a pattern where women decided to either participate in the labour market prior to having children and did not leave until retirement, or did not participate at all. In other words, women did not usually enter the labour market and then exit, permanently or temporarily, in order to have children. A timely question is how the curve representing the participation rate of those born between 1972 and 1976 will evolve. If the participation rate continues to increase then there will be, in the medium-term at least, a significant improvement in the overall female participation rate.

From the information presented in this section we note quantitative and qualitative changes in the participation of women in the labour market over time.[22] Institutional, social and economic factors led to an increased participation of women in the labour market after 1980. This quantitative change was accompanied by an upgraded role for women in the labour market as their education level improved significantly. In fact, most working women today are in dependent employment, while the share of professional women is rising.

Despite these improvements, however, there is still a gap with the EU-15. The next section looks at factors that could perhaps help explain this discrepancy.

21 See OECD (1988) and OECD (2002).
22 Similar changes, which however started much earlier, have also taken place in most developed economies (see, *inter alia,* Killingsworth and Heckman, 1986).

Table 7

Deviation of female labour force participation rates from the EU-12[1] average, 2003

(Percentage points)

Age / Countries	20-59	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Sweden	13.0	5.4	4.8	8.0	10.3	11.9	14.7	20.2	31.7
Denmark	12.3	13.9	4.8	7.0	11.0	9.9	12.0	17.8	26.2
Finland	12.2	8.6	2.1	5.1	9.7	12.8	15.6	20.9	25.0
Germany	6.7	9.2	–0.6	2.8	4.2	6.3	8.3	10.3	12.4
Portugal	5.5	3.4	9.9	11.0	8.9	2.9	2.6	0.3	4.6
Austria	5.1	8.2	5.6	6.1	6.4	6.6	7.1	6.0	–10.3
France	4.9	–5.8	3.6	3.3	5.1	8.2	8.2	10.6	8.0
Netherlands	4.5	22.7	9.5	4.8	1.8	1.2	3.6	–0.5	–3.2
Spain	–7.1	–0.7	3.7	–2.4	–7.7	–10.2	–13.8	–19.1	–15.4
Belgium	–8.2	–15.2	–1.6	–1.7	–1.7	–5.2	–10.3	–13.4	–19.3
Greece	–9.1	–6.7	–0.8	–5.0	–6.8	–8.9	–14.3	–16.5	–15.5
Italy	–13.0	–12.2	–11.0	–9.5	–10.1	–14.2	–15.0	–16.7	–18.6
Average female labour force participation rate (%)[2]	68.9	57.5	75.2	75.3	75.3	76.0	73.2	65.1	47.4

1 Ireland, Luxembourg and the UK are not included.
2 The average female labour force participation rate refers to the countries included in the Table and differs somewhat from that quoted in the Introduction, since it refers to a different time period, to a different age group and to a smaller group of countries.
Source: ILO Yearbook of Labour Statistics, 2004 and NSSG, Labour Force Survey.

3. Why is female participation in Greece lower?

In 2005, as mentioned in the introduction, the percentage of economically active women in Greece was around 10 percentage points lower than the corresponding EU-15 average. Table 7 shows that this discrepancy is due to the lower participation rate of women in all age groups. In fact, however, the gap appears to be increasing with age; although the gap is only one percentage point for women between 25 and 29 years old, it is estimated at around 17 percentage points[23] for women between 50 and 59 years old.[24]

For older age groups the gap reflects both a cohort effect and the lower effective retirement age in Greece.[25] The discrepancy of the overall female participation rate between Greece and the EU-15 will decrease over time if the difference observed in 2003 for women aged between 25 and 29 years old continues to be narrow as these

23 In Table 7 age groups 30-44 and 50-59 have been divided in sub-groups and the discrepancies quoted in the text have been calculated as the weighted average of the gaps of the respective sub-groups.

24 Despite the fact that as mentioned in the Introduction the issue of female unemployment is not dealt with here, an investigation of employment and unemployment data shows that the narrow gap between the participation rate of young women in Greece and the EU-15 does not reflect a small gap in employment rates since unemployment in these age groups is much higher in Greece than in the EU-15.

25 The retirement age in Greece is 60 for women and 65 for men. The effective retirement age, however, is influenced by the favourable retirement eligibility criteria for certain groups. In most other EU-15 countries the retirement age for women is higher (see, Economic Policy Committee, 2000).

women grow older.[26] This change, however, will only become evident in the medium-term. In the short-term, measures are still necessary to increase the participation rate of women aged between 30 and 44 years old, for which the discrepancy is around 7 percentage points.

Fertility

Despite the lower participation rate of women in Greece, the fertility rate is also below the EU average. More specifically, according to Eurostat data and as already mentioned, in 2004 fertility in Greece was 1.3 children per woman compared to 1.5 children in the EU-15 (calculations on the basis of Eurostat, 2005b data). One explanation consistent with these facts is the joint nature of the participation decision and the fertility decision (see Del Boca, 2002).

Cultural factors

Economists and sociologists often attribute cross-country differences in female participation rates to cultural and institutional factors. To the extent that these factors can be quantified they are presented below.

The term "cultural factors" is used to describe preferences and social attitudes towards working women. According to a 1998 survey by the *European Foundation for the Improvement of Living and Working Conditions* 66% of married couples in Greece with a child younger than 6 prefer a work pattern that involves full-time employment by both spouses, while 11% of the couples prefer full-time employment for the husband and part-time employment for the wife. With the exception of Finland (80%) and Sweden (67%) these percentages are the highest amongst the countries surveyed.[27]

A recent paper in applied economics (see Antecol, 2000), however, suggests that cultural factors contribute to cross-country differences in participation rates. Antecol uses data on immigrants in the USA from different countries, including Greece, to assess the importance of cultural factors in explaining gender gaps in participation rates. The hypothesis under investigation is that gender gaps in the participation rates of immigrants could be attributed to differences prevailing in the home country. Antecol (2000) tests this hypothesis using data on economic activity of immigrants (first and second generation) to draw the conclusion that for first generation immigrants in the US, approximately half of the difference in the participation rates between men and women in 1990 could be attributed to home country differences.

Institutional factors

Regarding institutional factors a distinction should be made between institutions affecting labour supply (e.g. childcare facilities, income tax etc.) and those affecting labour demand (e.g. extent of market competition etc.) without, however, excluding the possibility that some factors (e.g. anti-discrimination laws) could impact on both supply and demand.

(a) Anti-discrimination laws

The principle of equal pay for equal work, or work of equal value, laid out in Article 141 of the

26 There is concern that high unemployment rates amongst young women might lead them to exit the labour market due to a "discouraged worker effect". See Genre *et al.* (2005) on the importance of this effect in other European Union countries.
27 Jaumotte (2003), Table 1.

Amsterdam Treaty (see European Union, 1997) has been in force —in this form— in the European Union since 1975, although it constantly evolves through the adoption of new directives transposed into national law. In effect there are no significant differences today between anti-discrimination legislation in Greece and the European Union. Some countries of course adopted these measures much earlier than others (e.g. United Kingdom) and thus have already witnessed more of an impact.

(b) Incentives for hiring women

The establishment of incentives to promote female employment has been followed for a number of years in Europe and more recently in Greece (see European Commission, 2005a). The 2001 Greek Constitution (article 116, paragraph 2) provides that "The adoption of positive measures for the promotion of equality between men and women does not constitute gender discrimination".[28] An indication of the effectiveness of these measures through a general equilibrium analysis, however, is not available.

(c) Availability of childcare facilities

In the last few years the availability of childcare facilities in Greece has increased. More specifically, both the pre-primary education network, which is part of the official educational system, and the network of public nurseries and crèches has expanded. Furthermore, in 1997 the all-day nursery and primary school, with extended opening hours (up to 4 pm), was introduced.[29] As an indication of the size of the network, note that 1,306 state nurseries (for 78,000 children aged 2.5 years and over) and 132 crèches (for 10,000 toddlers aged 8 months and older) were in operation in 2005 (see General Secretariat for Gender Equality, 2005). Furthermore, regarding the official educational system, the number of kindergartens increased from 5,616 in the academic year 1997-98 to 5,716 kindergartens (5,600 of which are state-run) in the academic year 2004-5.[30] Furthermore, 1,635 all-day kindergartens and 3,008 all-day primary schools were in operation in the academic year 2002-3. These numbers increased further in the academic year 2005-6 to 2,365 all-day kindergartens and 4,257 all-day primary schools. In other words, the pre-primary and primary school network has expanded, opening hours have been extended, while there have also been efforts to improve the quality of the services provided.

Despite these efforts, however, the education system in Greece, and especially pre-primary and primary education, lags behind that in other EU-15 countries in terms of certain features that create favourable conditions for maternal employment such as the age of entry into pre-primary education, the number of school opening hours and expenditure per student.[31] Table 8 presents in a concise way these features together with the percentage of children younger than 4 years old who attend pre-primary education.

28 Examples of such policies in Greece are: (a) the introduction of schemes for the enhancement of employability and entrepreneurship of women (see e.g. National Action Plan for Employment, 2004; General Secretariat for Gender Equality, 2005 and the web page of the General Secretariat for Gender Equality – www.isotita.gr), (b) the provision of incentives to employers to hire women by subsidising the cost of social security contributions for women hired on fixed term contracts to replace women on maternity leave (Law 3227/2004), (c) the promotion of part-time employment in the public sector for mothers with juveniles through gender quotas (10% of the total number of those hired).

29 The all-day kindergarten and primary school were established by Law 2525/1997.

30 NSSG, *Education statistics*, various issues.

31 As the OECD also mentions, however, lower education expenditure does not necessarily imply worse quality of education.

Table 8
Features of pre-primary education and expenditure on primary education in EU countries

	Age of entry into pre-primary education	Number of hours of daily attendance	Enrolment rates of children 4 and under as a percentage of the population of 3-to-4-year-olds (2003)	Annual expenditure on primary education per student (in 2002 US dollars)[2]
Belgium	2.5	7	120.7[1]	5,485
France	2	8	118.9[1]	4,790
Germany	3	4–5	78.7	4,536
Denmark	5	10	88.0	7,246
Greece[3]	3.5	4 (8 for the all-day establishments)	28.5	3,516
UK	Limited pre-primary education, since children can enter into primary school from the age of 3 for 3 hours per day, initially, and for 6-7 hours after the age of 4.	6–7	77.2[5]	5,062
Ireland[4]	3	5	26.1	3,837
Spain	3	5	115.9[1]	4,502
Italy	3	8–10	104.1[1]	6,834
Netherlands	Limited pre-primary education since children 4 years old can enter into primary school.	7	36.4	5,451
Portugal	4	5–6	70.3	4,786

1 For certain countries this ratio exceeds 100% since some children younger than 3 who attend pre-primary education (as is clear from the second column of this table for the case of Belgium and France) are included in the numerator but not in the denominator.
2 Data refer to expenditure on primary education for all countries except for Greece where the data also include expenditure on pre-primary educational establishments. The figures have been converted to US dollars using purchasing power parities.
3 Must be 4 on 31 December of the matriculation year.
4 Children are allowed to attend primary school from the age of three.
5 Does not include children in pre-primary education.
Sources: Education Research Centre of Greece (2003), OECD (2005b, Tables C.1.2.και X.2.3a) and Rice (1999) Table 2.

Apart from the substantial reasons for which childcare facilities in Greece should be enhanced there is also the formal need to fulfil the so-called "Barcelona targets".[32] The European Council in Barcelona in March 2002 asked member states to aim to provide, by 2010, childcare to at least 90% of the children between 3 years old and the mandatory school age, and to 33% of the children younger than 3 years old.[33]

In addition to the availability of childcare facilities, the state could encourage female participation by covering part of childcare costs. In Greece two types of childcare related allowances can be distinguished. The first category includes family allowances which are paid by the employer for each of the employee's children who is under age or is studying. The second category comprises subsidies paid by the state

32 Presidency Conclusions of the Barcelona European Council, 15-16 March 2002 (http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/71025.pdf).
33 We have not been able to locate official data regarding the progress towards the "Barcelona targets".

which are related to the *number of children* in the family. These subsidies have been recently revised with the main aim, however, to reverse adverse demographic developments and are not targeted towards increasing employment.[34] Furthermore, with effect from 2003 the tax exempt limits have been made dependent on the number of children in the household. Despite these changes, however, these allowances cannot in most instances cover the cost of private pre-primary education.[35]

(d) Flexible forms of work

Flexible forms of work (e.g. part-time work, teleworking, annualisation of working hours etc.) which facilitate balancing between family and professional life are preferred by many women.

The extent to which some of these forms of work are actually utilised in Greece is not clear, as regards, e.g., the annualisation of working hours. Different estimates arise from the absence of official data and the possible undeclared use of these forms of work. Regarding part-time employment, however, the low percentage of women employed in part-time jobs seems indisputable. According to Labour Force Survey data this percentage amounted to 9.1% in the first half of 2005. The corresponding figure for the EU-15 was 36% (Eurostat, New Cronos database).[36] This difference is partly due to the much higher share of self-employed women in Greece compared to the EU-15, but even amongst female employees the weekly hours of work in Greece are longer than in the EU-15.[37]

It is possible that the limited number of part-time jobs in Greece is due to the high level of non-wage labour costs and more specifically the administrative burdens associated with hirings (see e.g. SEV-IOBE, 2005 and IOBE, 2005).[38] E.g. these burdens might discourage hiring of two part-time employees in place of a single full-time employee.

(e) Business climate and product market regulations

The business climate appears to be an additional reason for cross-country differences in total employment rates; (see, *inter alia*, Pissarides, 2003). The excessive number of regulations has a negative impact on entrepreneurship and on the creation of new jobs (for both men and women). However, it is thought that the female employment rate is more affected by these regulations since these are especially burdensome for small and medium-sized enterprises concen-

34 Law 3454/2006 "Family enhancement and other provisions".

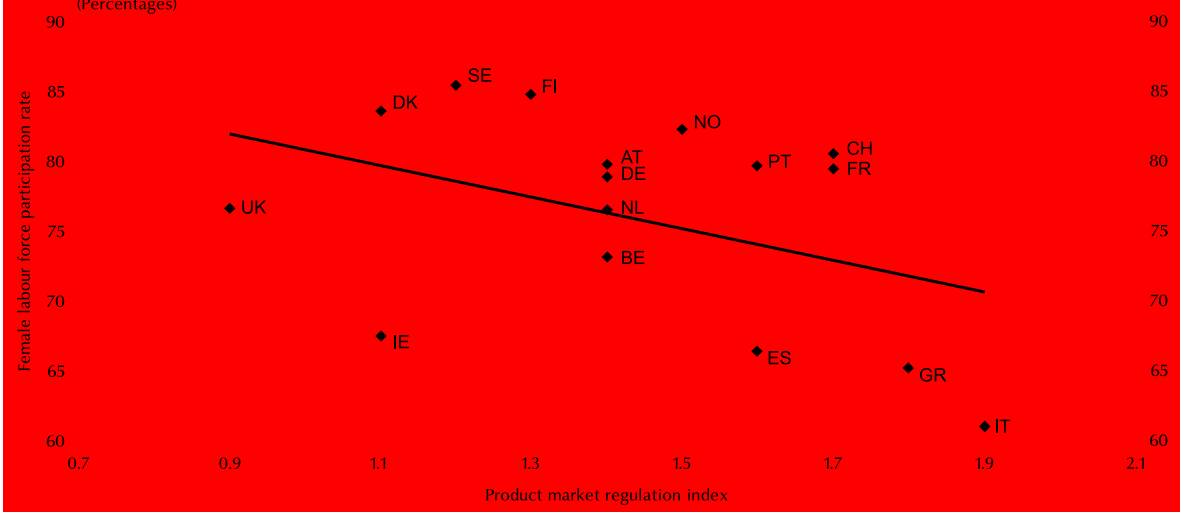
35 The OECD (see OECD, 2005e) compares the average tax rates (taxes and social security contributions) of a childless couple with that of a couple with two children after taking into account the allowances mentioned above and the adjustment to the tax exempt limits (Law 3091/2002) and estimates that these would lead to a decrease in the average tax burden on taxable family income by around 0.8 percentage points. In both instances the one spouse is assumed to earn the average wage, while the other spouse earns 33% of the average wage.

36 The LFS does not adopt a specific limit on the weekly hours of work for a job to be a part-time job instead the data are based on the interviewee's own assessment. As a result data are not entirely comparable between countries.

37 As an indication, note that in the 3rd quarter of 2005 over 70% of women in dependent employment jobs worked over 35 hours per week.

38 The SEV-IOBE (2005) pilot survey estimates that in a small enterprise (with between 2 and 50 employees), the cost of bureaucracy which has been defined to include the cost of compliance with administrative requirements, the cost resulting from delays in government payments, in carrying out business investments or other actions amounts, on average, to 7.2% of the firm's value added. The administrative requirements included in this estimate are not of course related only to hirings but amongst these there are procedures related to the Greek Manpower Employment Organisation (OAED), with keeping records of newly hired employees etc.

Chart 3
Labour force participation rates of women between 25 and 54 years old and product market regulation index, 2003
(Percentages)



Sources: Conway *et al.* (2005) and OECD (2005c).

trated in the service sector, where the share of employed women is higher (see Pissarides *et al.*, 2005). Chart 3 illustrates the negative correlation between the female labour force participation rate and a product market regulation index for a number of OECD countries.[39]

Finally, it seems that the system of income taxation in Greece does not appear to create disincentives to labour supply, since spouses submit a joint tax return but are taxed separately, in contrast to what happens in other countries (e.g. France, Portugal).

Summarising this section, it appears that differences between Greece and the EU-15 regarding cultural factors and anti-discrimination legislation are no longer significant. Institutional restrictions mainly related to the demand side (e.g. difficulties in creating part-time jobs, poor business climate) as well as the shortage of childcare facilities, could perhaps explain part of the discrepancy in the participation rates between Greece and the EU-15.

4. Factors determining labour market participation

4.1 A labour market participation equation

This section sets aside the cross-country institutional and cultural differences discussed above and aims to investigate the determining factors of female participation within the Greek labour market. The second section presented figures on female labour market participation on the basis of certain demographic features (age, marital status, degree of urbanisation etc.) each of which, how-

39 The product market regulation index, published in Conway *et al.* (2005) varies between 0 and 6. The lower the indicator value, the lighter the administrative burden.

ever, was looked at independently. This section presents the results from conditioning on these variables simultaneously and estimating a model of the following form:

$$P(lfp = 1) = \Phi(z_i, g_i, q_j, w_h)$$

Where $P(lfp)$, the dependent variable is a binary variable denoting the probability of the woman participating in the labour market and takes the value 1 when the woman participates in the labour market and 0 otherwise, z_i includes demographic variables (age, marital status, location of residence, number of children, household size), g_i measures the education level, q_j represents variables that proxy the husband's economic activity, while w_h includes household income variables. The subscripts (i, j, h) denote the woman, the husband and the household respectively. This model is estimated by maximum likelihood using the normal cumulative function as the Φ function (probit model).

Despite the low female participation in the Greek labour market, the applied economics literature on this topic is sparse. More specifically, most studies on the presence of women in the labour market focus on the gender pay gap issue (see, *inter alia*, Psacharopoulos, 1983; Kanellopoulos and Mavromaras, 2002; Karamessini and Ioakimoglou, 2003 and Papapetrou, 2004).

The gender pay gap on the basis of average gross hourly earnings without adjustment for the productive features of the individuals (e.g. education level, work experience) was 13 percentage points in 1998 (Papapetrou, 2004). Even after adjustment for these productive characteristics, however, the gender pay gap continues to be significant. According to Papapetrou (2004) the explanatory variables can account for only around 40% of the total gender pay gap. The discrimination against women, corroborated by the other studies listed above, can be thought to exercise a negative influence on the participation rate.

There are only a couple of well-known studies that focus on the determining factors of female participation in Greece. The first by Meghir *et al.* (1989) makes use of the 1981 Labour Force Survey (LFS) to estimate a reduced form participation equation and an equation on weekly hours of work. The results indicate the importance of location, education level of the wife and the presence of young children in the participation decision. The importance of location (proxied by dummy variables discriminating between different areas based on their urbanisation) can be explained by the fact that in rural areas the nature of work demands the contribution of both spouses, thus increasing female participation rates. As expected, the education level has a positive impact on participation, while the number of children younger than 6 has a negative influence. To the extent that the results are comparable to estimates for other countries, it appears that children do not hinder female participation to the same degree as in other countries. This result might be due to the strong family ties in Greece, which served, at least in the past, as an informal child-care network.

The second relevant study of Daouli, Demoussis, and Giannakopoulos (2004) estimates a participation equation and a weekly hours of work equation making use of cross-section data from the 1998 Greek Family Expenditure Survey which includes information on wages and other income. The results suggest that the elasticity of hours of

work with respect to the hourly wage is less than unity, that the elasticity of hours of work and of participation with respect to the husband's income and with respect to regular non-labour income is negative, that a higher education level increases the chances of participation and that the number of children younger than 13 have a negative impact both on the rate of participation and the hours supplied.

4.2 Data and results

The model estimated herein does not differ substantially from the last model mentioned above, but is based on data from the European Community Household Panel (ECHP) for 2001. More specifically, the participation equation is estimated using a sample of women between 18 and 59 years old, from which students, pensioners and women with a poor health have been excluded. The equations that contain variables proxying the husband's characteristics and income are only estimated for married women with an economically active (employed or unemployed) husband. Self-employed women and women working as unpaid family members have also been excluded from the analysis.[40]

The estimates are presented in Tables 9 and A6.

The variables used in the model presented in Table 9 are the woman's age (grouped in 5 bands), the education level of both spouses, the location of residence, the number of children in three age groups (0-6 years old, 7-10 years old and 11-14 years old), the number of household members over 16 years old, as well as the features of the economic activity of the husband (self-employed or otherwise and hours of work). All variables, bar those that measure the number of children, the household size and weekly hours of work, are dummy variables that take the value 1 when the person possesses the feature in question and 0 otherwise. The choice of groupings has been dictated by the information available in the database. So, regarding the level of education, the interviewees are classified into three groups (following the International Standard Classification of Education, ISCED, 1997) depending on the highest education level attained: (a) compulsory education graduates (ISCED 0-2), (b) secondary school graduates (ISCED 3), used here as the reference group, and (c) tertiary education graduates (ISCED 5-7). Regarding location of residence the database contains information on location in one of 4 regions that correspond to the NUTS I levels as these are defined by Eurostat. These regions are Attica (those residing there have been set as the reference group in the presentation of the results), Northern Greece, Central Greece and the Aegean islands together with Crete.

The coefficient estimates on the dummy variables presented in Table 9 measure the change in the probability of participation, with respect to the average expected probability, when the dummy variables take the value 1 instead of 0. The coefficients on the continuous variables on the other hand measure elasticities. The results suggest that the participation rate increases significantly as the wife's *education level* improves and that both the direction and the size of the estimated impact do not differ significantly between married and single women nor are the

40 Self-employed women have been excluded due to scarce information on their income.

Table 9

Results from estimating a probit model for female labour participation[1] using 2001 ECHP data

(Marginal effects[2,3])

	All women 18-59 years old(1)	Married women 18-59 years old(2)	Married women 18-59 years old/ Impact of the number and age of children (3)	Married women 18-59 years old / Household size (4)	Married women 18-59 years old/ Husband's economic activity (5)
			Age		
18–29 years old	0.075 (0.033)*	–0.087 (0.044)*	–0.098 (0.046)*	–0.098 (0.046)*	–0.095 (0.051)
30–34 years old	*Reference group*	*Reference group*	*Reference group*	*Reference group*	*Reference group*
35–44 years old	–0.00025 (0.033)	0.029 (0.038)	–0.030 (0.041)	–0.037 (0.041)	–0.065 (0.047)
45–54 years old	–0.034 (0.035)	0.0062 (0.040)	–0.094 (0.046)*	–0.10 (0.046)*	–0.091 (0.055)
55–59 years old	–0.16 (0.046)**	–0.10 (0.050)*	–0.20 (0.052)**	–0.21 (0.052)**	–0.25 (0.064)*
			Woman's education level[4]		
ISCED 0–2	–0.14 (0.023)**	–0.11 (0.027)**	–0.11 (0.027)**	–0.11 (0.028)**	–0.20 (0.037)**
ISCED 3	*Reference group*	*Reference group*	*Reference group*	*Reference group*	*Reference group*
ISCED 5–7	0.28 (0.023)**	0.35 (0.030)**	0.36 (0.029)**	0.36 (0.029)**	0.38 (0.043)**
			Region		
Attica	*Reference group*	*Reference group*	*Reference group*	*Reference group*	*Reference group*
Northern Greece	–0.014 (0.027)	0.011 (0.033)	0.014 (0.033)	0.011 (0.033)	–0.092 (0.040)*
Central Greece	0.026 (0.029)	0.054 (0.035)	0.064 (0.035)	0.061 (0.035)	–0.017 (0.044)
Aegean islands, Crete	0.082 (0.033)*	0.13 (0.041)**	0.13 (0.041)**	0.13 (0.041)**	0.13 (0.055)*
			Number of children		
Number of children 0 – 6 years old	–	–	–0.10 (0.024)**	–0.10 (0.024)**	–0.078 (0.028)**
Number of children 7- 10 years old	–	–	–0.047 (0.026)	–0.044 (0.026)	–0.061 (0.033)
Number of children 11 – 14 years old	–	–	–0.040 (0.026)	–0.036 (0.026)	–
			Household size		
Number of adult members	–	–	–	0.014 (0.013)	–
			Economic activity of the husband		
Self-employed	–	–	–	–	–0.11 (0.035)**
Weekly hours of work	–	–	–	–	–0.0058 (0.0015)**
			Husband's education level[4]		
ISCED 0–2	–	–	–	–	–0.017 (0.039)
ISCED 3	–	–	–	–	*Reference group*
ISCED 5–7	–	–	–	–	0.052 (0.047)
Sample participation rate	60.3	52.2	52.2	52.2	42.9
Predicted participation rate	61.9	53.2	53.2	53.2	42.3
Likelihood Ratio	$\chi^2(9)=314.9$	$\chi^2(9)=200.6$	$\chi^2(12)=221.9$	$\chi^2(13)=223.1$	$\chi^2(15)=304.8$
Pseudo–R^2	9.2	7.8	8.6	8.6	18.6
Number of observations	2,559	1,870	1,870	1,870	1,202

1 The dependent variable is binary and takes the value 1 when the woman participates in the labour market (as employed or unemployed) and 0 otherwise.
2 The coefficients presented are marginal effects and show the impact of a change in the explanatory variables on the deviation from the average participation probability of the reference group. Standard errors are presented in brackets. Statistical significance at the 1% and 5% level is denoted with ** and * respectively.
3 All variables with the exception of those representing the number of children, the number of adult members of the household and the weekly hours of work are dummy variables that take the value 1 when the individual possesses the feature in question and 0 otherwise. Means of the variables in this table are presented in Table A4 in the Appendix.
4 ISCED 0-2:compulsory education or lower, ISCED 3: upper secondary education or lower, ISCED 5-7:university education or lower.

results sensitive to changes in the parametrisation of the equation. The husband's education level does not appear to have an additional influence on the participation decision probably

because of the high correlation between the education levels of the two spouses (column 5 of Table 9).[41] *Household size*, proxied by the number of adult household members, does not appear to have an impact on the participation decision (column 4 of Table 9). A positive coefficient was expected on this variable since the probability of some household member being able to stay with the children at home increases with household size. The husband's *weekly hours of work* have a negative impact on participation either due to an income effect or due to the limitations that the husband's absence for long hours places on the wife's choices (column 5 of Table 9). The husband's employment status as *self-employed* appears to have a negative impact on the wife's participation, perhaps because she also contributes to her husband's "business" (column 5 of Table 9). A further variable which was tested, but is not reported here, is the indication of whether children regularly attend a nursery or crèche. This variable appears with a positive significant coefficient, suggesting that mothers of children who attend some form of pre-primary care institution are more likely to work. Despite the fact that there is no one-to-one correspondence between maternal employment and school attendance, this variable could well be endogenous.

To some extent the variables used so far capture the wife's potential wage through the education level, age and the husband's status and hours of work. However, an augmented, with income variables, participation equation has also been estimated, in order to test directly for the hypothesis that the participation decision is influenced by the potential wage. The results are presented in the Appendix (Table A6) and they confirm the results of Table 9. The wife's level of education and her work experience are proxies for her potential wage which increases the likelihood of participation. The income effect, which is here proxied by the husband's income and non-labour income, is negative.

The results presented above are of necessity quite general since the database used lacks sufficient detail on certain variables. The use of a combination of alternative datasets (e.g. LFS together with the Standard of Income and Living Conditions database) with more detail on the level of education and location would allow a more precise estimate of the extent to which the shortage of childcare facilities by region hinders the participation decision or could provide more information on which type of education (e.g. vocational, college education etc.) facilitates participation. Furthermore, given that the questionnaire used is common to all EU-15 countries, useful conclusions on cross-country differences could be reached by estimating the model for a number of different countries.

5. Conclusions

The foregoing analysis illustrates the quantitative and qualitative changes that have taken place since the 1960s in female participation rates in the Greek labour market. Institutional, social and economic factors led to increased participation of women after 1980. Comparisons of participation rates between different cohorts show that this upward trend has been observed in all age groups with the exception of those between 15 and 19

41 The partial correlation coefficient of the education level of the two spouses is 0.62 and is statistically significant at the 1% level.

years old and those between 60 and 64 years of age. This quantitative change was accompanied by an upgrading of the role of women in the labour market as the education level of the representative woman improved significantly. Despite this increase, however, a gap with the EU-15 in terms of participation rates still exists. While social and cultural factors might have contributed to the discrepancy observed for older age groups, these cannot explain the differences observed in younger age groups. The negative correlation between the number of children and the participation rate, which is clear in the sample used here, together with the shortage of childcare facilities, suggests that improvement in childcare infrastructure might increase participation. Certain features of the operation of product markets (e.g. the extent of administrative burdens) also emerge as factors that could be hindering job creation, especially part-time jobs. The focus of this paper was on the supply side. The demand side, however, has to be further investigated if we are to understand the determining factors of female unemployment.

Appendix

1. Data on male participation in the Greek labour market and the education level of the male population

Table A1

Male labour force participation rate by age group, 1961-2001

(Percentages)

Age group	1961	1971	1981	1991	2001
15-19	67.0	51.4	37.7	25.4	19.5
20-24	87.2	76.2	71.5	75.6	66.6
25-29	96.4	93.0	95.0	94.6	90.0
30-34	97.5	96.4	97.8	97.4	94.8
35-44	96.6	96.1	97.3	96.8	94.0
45-54	93.4	92.5	92.6	89.3	87.4
55-64	81.6	76.0	72.5	56.0	51.5
15-64	89.5	84.6	83.1	77.8	75.1

Source: NSSG, Population Censuses, 1961-2001.

Table A2

Highest education level[1] of the male population,[2] by age group, 2001

(Percentages)

Age	No education	Pre-primary education	Primary education	Lower secondary education	Upper secondary education	Post- secondary education	Tertiary education	Total
70–74	5.1	22.3	47.7	4.5	12.1	0.9	7.4	100.0
65–69	5.6	19.5	43.9	5.6	14.7	1.2	9.5	100.0
60–64	2.8	10.1	50.4	6.0	17.1	1.5	12.1	100.0
55–59	1.6	4.4	50.0	6.9	20.0	2.1	15.0	100.0
50–54	1.3	2.4	43.9	7.9	23.2	2.8	18.5	100.0
45–49	1.2	1.5	34.4	10.0	28.1	3.5	21.3	100.0
40–44	1.2	1.1	28.0	9.8	33.5	3.8	22.6	100.0
35–39	1.2	1.0	20.6	12.7	37.9	3.7	22.9	100.0
30–34	1.3	0.9	16.0	15.0	40.0	4.5	22.3	100.0
25–29	1.4	0.9	12.8	15.1	42.4	6.9	20.5	100.0
20–24	1.4	0.7	11.7	13.7	55.7	8.2	8.6	100.0
15–19	0.8	0.6	13.7	51.1	32.6	1.2	0.0	100.0

1 Following the International Standard Classification of Education (ISCED) 1997.
2 The information in this table refers to the male population as a whole and not just to labour force participants.
Source: NSSG, Population Census, 2001.

Table A3

Distribution of employed men (15-64 years old) by employment status and ratio of women to men in each category, 1971-2001

(Percentages)

	Employers	Self-employed	Unpaid family members	Employees
		Men		
1971	5.3	40.8	7.4	46.5
1981	3.6	42.8	4.5	49.1
1991	8.6	34.7	3.7	53.0
2001	13.7	20.2	1.8	64.3
		Ratio of the percentage of women to men in each category[1]		
1971	0.2	0.3	8.1	0.6
1981	0.3	0.3	6.5	1.2
1991	0.5	0.5	3.3	1.2
2001	0.6	0.5	6.1	1.1

1 The ratio of the percentage of women to men in each category has been calculated using the figures presented in Table 5 of the text and in the upper panel of this table.

Source: NSSG, Population Censuses, 1971-2001.

2. Descriptive statistics on the variables used in the estimation of the probit model

Table A4
Means of the variables in Table 9[1]

	All women 18-59 years old (Column 1 of Table 9)	Married women 18-59 years old (Columns 2-4 of Table 9)	Married women 18-59 years old/ Features of the husband's economic activity (Column 5 of Table 9)
Labour force participation	0.60	0.52	0.43
Age			
18–29 years old	0.27	0.14	0.18
30–34 years old	0.14	0.15	0.18
35–44 years old	0.27	0.33	0.36
45–54 years old	0.23	0.28	0.23
55–59 years old	0.09	0.10	0.05
Woman's education level[2]			
ISCED 0–2	0.43	0.50	0.43
ISCED 3	0.40	0.35	0.40
ISCED 5–7	0.17	0.15	0.17
Region			
Attica	0.24	0.23	0.26
Northern Greece	0.36	0.37	0.36
Central Greece	0.27	0.27	0.25
Aegean islands, Crete	0.13	0.13	0.13
Number of children			
Number of children 0 – 6 years old	–	0.34	0.42
Number of children 7 – 10 years old	–	0.22	0.25
Number of children 11 – 14 years old	–	0.22	–
Household size[3]			
Number of adult members	–	2.9	–
Economic activity of the husband			
Self-employed	–	–	0.39
Weekly hours of work	–	–	46.3
Husband's education level[2]			
ISCED 0–2	–	–	0.42
ISCED 3	–	–	0.35
ISCED 5–7	–	–	0.23
Number of observations	2.559	1.870	1.202

1 The figures presented here are the means of the variables used in the estimation. So for the participation rate and the dummies they represent the percentage of the sample with the feature in question.
2 For ISCED classification see Notes to Table 9.
3 Household size is measured with the number of members over 16 years old.

3. Augmenting the participation equation with earnings variables

This section presents the results from the addition of earnings variables to the participation equation. The earnings variables used are the wife's potential wage, the husband's wage and family non-labour income.

3.1 Estimating a wage equation

Given that data on wages are by definition available only for employed women, the potential wage which has been used here has been estimated on the basis of the following equation.[42]

$$\ln w_i = a + \beta_1 age_i + \beta_2 age_i^2 + \beta_3 \exp_i + \beta_4 educ_i + \beta_5 reg_i + e_i$$

The dependent variable in this equation, which is estimated only for those employed women for whom information on earnings is available, is the natural logarithm of the average gross hourly wage ($\ln w_i$) . The explanatory variables are age_i, age_i^2, the number of years of work experience in the current job ($\exp_i$), the education level ($educ_i$) and the location of residence (reg_i). This model includes as explanatory variables only individual "productive" features that are observable for all women in the sample (i.e. for employed and non-employed alike) thus permitting the use of the estimated coefficients to estimate a potential wage for all married women in the sample.

Since the selection of employed women is not random (see, *inter alia*, Gronau, 1974), given that for these women the wage received is higher than the *reservation wage*, Heckman's correction procedure for potential selection bias has been applied in estimating the model.[43]

The dependent variable has been calculated using ECHP data for the gross monthly wage [pi211mg][44] and the monthly hours of work [a transformation of the variable pe005]. The explanatory variables include age [pd003] and the square of age (since the wage is a non-linear function of the latter) and previous work-experience calculated on the basis of the number of years in the current job [pe011]. The returns to education are estimated by using three dummy variables [on the basis of variable pt022] which denote the highest education level of the individuals in the sample (compulsory education or lower, secondary education, tertiary education). Regional differentials in wages are captured through the use of dummy variables for the 4 NUTS I level regions into which Greece is divided [on the basis of variable hg015].

The estimates of the above equation (see Table A5) show that the wage is positively correlated to: age (not linearly), to previous work experience and to the education level. The coefficient estimates using OLS and Heckman's sample selection correction procedure are tabulated in Table A5. Although the coefficient estimates from the two estimation procedures do not differ significantly, a test for the hypothesis that there is bias in the sample selection cannot be rejected. The potential wage is calculated using the coefficient estimates presented in the first column. The fitted wage is then used in the participation equation presented in Table A6.

3.2. Augmenting the participation equation with earnings variables

The augmented participation equation includes the variables presented in Table 9 of the main text together

42 Layard *et al.* (1980) follow a similar methodology in estimating a participation equation with earnings variables.
43 See Johnston and DiNardo,1997.
44 Variable labels, as they appear in the ECHP, are presented with lower case letters in square brackets.

Table A5

Estimates of the wage equation

(Dependent variable: lnw_i natural logarithm of the gross hourly wage)

	Estimation using Heckman's correction method[1] for sample selection selectivity bias	Ordinary least squares
	Age	
Age	0.044 (0.017)**	0.049 (0.017)**
Age^2	–0.00052 (0.00021)*	–0.00058 (0.00021)**
	Work experience	
Years of work experience	0.023 (0.0025)**	0.022 (0.0025)**
	Education level	
ISCED 0–2	–0.28 (0.048)**	–0.17 (0.044)**
ISCED 3	*Reference group*	*Reference group*
ISCED 5–7	0.58 (0.047)**	0.44 (0.036)**
	Region	
Attica	*Reference group*	*Reference group*
Northern Greece	–0.10 (0.044)*	–0.053 (0.040)
Central Greece	–0.029 (0.045)	–0.017 (0.042)
Aegean islands, Crete	0.045 (0.053)	0.015 (0.049)
Intercept	6.17 (0.33)	6.34 (0.33)
λ[3]	0.27 (0.051)	–
Adjusted R^2	–	0.52
Censored observations[4]	731	–
Uncensored observations[4]	471	471
Mean and standard deviation of the dependent variable (natural logarithm of the gross wage)	7.58 (0.48)	7.58 (0.48)

1 Heckman's method attempts to correct for the bias in the selection of the sample which by definition includes only working women.
2 The sample selection equation contains the following variables: age, educational dummies, number of children in the three different age groups and region of residence.
3 The λ parameter gives an indication of the existence or otherwise of selectivity bias. The value that λ takes here (with a p value of 0.0075) indicates that there was need to correct for selectivity bias.
4 The participation rate does not coincide with that presented in the previous table since no wage information is available for the unemployed, althought they are considered labour market participants.

with the log of the potential fitted wage ($ln\hat{w}_i$), the log of the husband's wage (lnw_j)[45] and the logarithm of household non-labour income (lny_h).

Table A6 shows that participation is positively correlated to the wife's potential wage and negatively correlated to the husband's wage and to household non-labour income. In other words, an increase in either the husband's wage or in non-labour income

45 For most men included in the sample, data on earnings are available. For those for whom we have no such information, we estimate their earnings on the basis of an earnings function as we did for women, without correcting, however, for potential selectivity bias since the percentage of non-participating men is rather small.

Table A6

Results from estimating a probit model for female labour participation[1] using 2001 ECHP data

(Marginal effects[2,3])

	Wages and income	
$ln\hat{w}_i$	1.035 (0.062)**	1.045 (0.064) **
lnw_j	–0.23 (0.050) **	–0.21 (0.051) **
lny_h	–0.011 (0.0032) **	–0.011 (0.0033) **
	Husband's economic activity	
Self-employed	–0.11 (0.037) **	–0.11 (0.037) **
Weekly hours of work	–0.006 (0.0017) **	–0.0065 (0.0017) **
	Number of children	
Number of children 0-6 years old	–0.049 (0.025) *	–0.049 (0.025) *
Number of children 7-10 years old	–0.043 (0.033)	–0.042 (0.033)
	Region	
Attica	–	*Reference group*
Northern Greece	–	0.038 (0.046)
Central Greece	–	0.013 (0.048)
Aegean islands, Crete	–	0.12 (0.058)
Likelihood Ratio	$\chi^2(7)=495.8$	$\chi^2(10)=500.8$
Pseudo–R^2	30.2	30.5
Participation rate in the sample	42.9	42.9
Predicted participation rate	44.0	44.1
Number of observations	1,202	1,202

1 The dependent variable is binary and takes the value 1 when the woman participates in the labour market (as employed or unemployed) and 0 otherwise.

2 The coefficients presented are marginal effects and show the impact of a change in the explanatory variables on the deviation from the average participation probability of the reference group. Standard errors in brackets. Statistical significance at 1% and 5% level is denoted with ** and * respectively.

3 All variables with the exception of those representing the number of children, the number of adult members of the household and the weekly hours of work are dummy variables that take the value 1 when the individual possesses the feature in question and 0 otherwise. Means of the variables in Table 9 and in this table are presented in Table A4.

depresses the need for participation in the labour market. The coefficients on the remaining variables do not differ in general from those presented in Table 9 of the main text.

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The impact of exogenous shocks on the dynamics and persistence of inflation: a macroeconomic model-based approach for Greece*

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1. Introduction

Inflation dynamics is one of the most pivotal issues in modern macroeconomic theory and in practical debates about the formulation of monetary policy and macroeconomic policy in general. Both the European countries and the US experience persistent inflation, with protracted periods of high or low inflation. Moreover, the deviations of inflation from its long-run level (which is judged as "normal") are long-lasting and the return to that level is a gradual and slow process. Inflation persistence has immediate consequences for conducting monetary policy. The appropriate response of monetary authorities to exogenous shocks depends largely on their prior knowledge of the degree to which inflation is persistent.

The European Central Bank (ECB), whose primary objective is price stability, has taken a direct interest in issues relating to the linkages that exist between monetary policy, inflation persistence and exogenous economic shocks. In this context, it set up an extensive research network of expert economists, called the "Inflation Persistence Network" (IPN), the objective of which was to investigate and to develop the understanding of the mechanisms underlying the dynamics and persistence of inflation in the euro area and the determinants thereof, as well as firms' price-setting behav-

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iour.[1] Inflation persistence was assessed from the standpoint of firms' price-setting policy, through the use of raw data at the product or service level, as well as from the standpoint of key macroeconomic linkages in the whole economy, through the use of a wide range of specialised macroeconomic models. This venture was a success, judging by the quality and quantity of the research work produced and the statistical information collected at the micro, macro and sectoral level.

For effectiveness reasons, a number of subgoals were set by the IPN and then small research groups were formed to focus on specific issues. Research Group 10 (RG10-Inflation Persistence in Macro Models) undertook the study of inflation persistence in the euro area by running a series of standard simulations with the structural models maintained at the Eurosystem central banks. In a first stage, RG10 designed the simulation exercises in collaboration with the ECB Working Group on Econometric Modelling (WGEM). These were subsequently performed in a uniform manner by the central banks of the euro area excluding Portugal. Following on from this, RG10 compiled the results and drew up a report (Berben *et al.,* 2005).

This paper presents the analytical results of the standard simulations for the Greek economy and then draws conclusions about the dynamics and persistence of inflation in Greece. In other words, it examines how various economic interventions and developments affecting demand and/or production costs (e.g. fiscal policy, productivity and indirect tax changes, etc.) are also likely to affect the dynamics and persistence of inflation. The main conclusion is that Greece belongs to a group of countries in which inflation, although it is generated by the same exogenous shocks that generate inflation in the majority of the other euro area countries, exhibits higher persistence than in the euro area as a whole. The simulations mentioned earlier in this paragraph were performed using the quarterly econometric model for the Greek economy (the Greek-mcm),[2] which is maintained at the Economic Research Department of the Bank of Greece.

Subsequently, we attempt to empirically investigate the possible sources of inflation persistence by looking at how inflation responds to the same exogenous shocks referred to earlier when the values of certain structural parameters that are presumably linked to inflation persistence and dynamics are changed. Findings in the relevant section may lead to some useful conclusions regarding the conduct of structural policy, in so far as the latter also seeks to create an economy with lower inflation persistence where prices may respond quicker to economic conditions and more effectively fulfil their role in conveying information. Undoubtedly, bringing down the persistence of Greek inflation to euro area levels would enhance the beneficial effects of the implementation of the single monetary policy.

The structure of the paper is the following: the next section summarises the main conclusions drawn by the IPN both at the micro and the macro level.

1 Establishing the IPN and the Monetary Transmission Network has been one of the most important initiatives of the ECB. It is aimed at producing an extensive research work, with the contribution of researchers from all national central banks of the Eurosystem and the ECB, in collaboration with distinguished experts in related fields drawn from the academic and research communities. The outcomes of the research work conducted by the two networks are published in the Working Paper Series of the ECB.

2 For a detailed description of the model, see Sideris and Zonzilos (2005).

Section 3 presents the methodology and hypotheses underlying the analysis, as well as the design of the five core simulations performed. It also sets out and assesses the statistics used in the empirical part of the paper to estimate the degree of inflation persistence. Section 4 analyses the empirical results for Greece in comparison with those for the euro area as a whole. Section 5 identifies the possible sources of inflation persistence, by conducting a number of additional simulations using an alternative set of structural economic parameters, and draws conclusions on what implications there may be for structural policy. The last section summarises conclusions.

2. Main conclusions of the IPN regarding inflation persistence in the countries of the euro area

The IPN defined inflation persistence as the tendency of inflation to gradually and sluggishly return to its long-run equilibrium following an exogenous shock. It subsequently distinguished three main sources of inflation persistence:[3] (i) persistence due to the persistence of inflation determinants (extrinsic persistence), (ii) dependence on past inflation due to firms' price-setting behaviour (intrinsic persistence) and (iii) persistence due to the formation of inflation expectations (expectations-based persistence).

The conclusions of the IPN research groups regarding the dynamics and persistence of inflation in the euro area can be summarised as follows:[4]

A. At the micro level

- In the euro area, retail prices change on average once every year. This is clearly less frequent than in the US, where a price change occurs about every two quarters.

- Price increases and price decreases are almost equally frequent and sizeable in all euro area countries and clearly exceed the average inflation rate.

- There is a pronounced heterogeneity across sectors and products in terms of price rigidity. Energy and unprocessed food prices change much more frequently than services and durables prices.

- There is no evidence of any particular downward price rigidity, except perhaps in the services sector, where price decreases are more infrequent.

- Explicit or implicit contracts among firms are the main source of rigidity in producer prices, with price adjustment ("menu") costs and information costs playing a rather minor role.

B. At the macro level

- There are asymmetries in the response of prices and their adjustment to cost versus demand factors. In particular, prices respond more strongly to cost increases rather than decreases, while they respond more to a fall in demand than to a rise.

- Micro-founded macro models (notably New-Keynesian Phillips curve models) generally imply little persistence in inflation in response to exo-

3 For a more extensive discussion of these issues, see Angeloni *et al*. (2004).

4 The terms "micro level" and "macro level" are not used here in the strict sense of the terms but only to introduce some grouping of the results. Hence, some of the results could fit into both categories.

genous shocks, especially under stable monetary regimes.

- The simulations performed with the macroeconomic models of the Eurosystem central banks showed little persistence in inflation in response to a wide range of exogenous shocks, with the exception of the fiscal shock.

- Numerous studies, based on different sorts of structural models, find that the degree of intrinsic inflation persistence has dropped in recent years. The existence of a stable monetary regime also seems to contribute in this direction.

- In the euro area, inflation persistence is rather limited and almost identical to that found in the US, whereas price rigidity (based on the frequency of price changes) is higher.

3. Design and description of simulations and empirical measures of inflation persistence

This section presents the hypotheses underlying the analysis, as well as the design of the five core simulations which were actually adopted and run by the national central banks using their own structural models. The results of these simulations were used by RG10 to investigate inflation persistence. Following this presentation, the statistics used in the empirical part of the paper to measure the persistence in the response of inflation to the various exogenous shocks are outlined and assessed.

3.1 Selection and design of simulations

The simulations were chosen on the basis of the preliminary investigation and identification of cost sources which can reasonably be expected to considerably affect the persistence and dynamics of inflation in the short to medium term. In addition, a simulation of an exogenous change in government consumption was performed to explore the impact of demand on inflation persistence. Another selection criterion was the criterion of explicit specification, which sought to ensure that simulations could be performed in a similar manner in all participating countries, as well as the need to guarantee the greatest possible uniformity and comparability of results. Specifically, the shocks that were actually selected and run can be listed as follows (the results of these exercises are presented as percentage deviations from baseline in Section 4):

1. *Fiscal shock:* a permanent (within a five-year window) increase in government consumption by 1% of real GDP.

2. *Oil price shock:* a permanent increase in oil prices by 10%.

3. *Total factor productivity shock:* a temporary increase in total factor productivity, initially leading to a 1% increase from baseline real GDP, with a gradual return to base according to a decay rate of the shock of 0.9 (autoregressive pattern).

4. *Indirect tax shock:* a permanent increase in the indirect tax rate by one percentage point.

5. *Social security cost:* a permanent increase in the social security contribution rate by one percentage point.

The above shocks were run by each central bank of the Eurosystem in isolated mode, with the pol-

icy rules of the respective national models assumed to be switched off. The results were subsequently collected by RG10 and reshaped to reflect the hypothesis that a Taylor rule operates in the euro area and that the nominal exchange rate of the euro is determined by UIP (uncovered interest parity),[5] while additionally trade spillover effects were also taken into account in the simulations.[6] This further elaboration of the raw results aimed to integrate them into a policy environment with cross-country spillover effects. The reshaped results were then used to derive figures for the euro area as a whole.[7]

3.2 Empirical measures of inflation persistence

In the empirical part of the paper, the results of the simulations are presented and analysed by means of a graphic representation of the path followed (in terms of deviations from baseline) by the rates of change in the private consumption and the GDP deflator after the various exogenous shocks. Also, the degree of inflation persistence is estimated using a number of measures which will be outlined further below.

In general, the persistence measures used try to summarise in a single value how fast or slowly inflation converges to, or diverges from, its initial (baseline) path after an exogenous shock. Three different measures of inflation persistence were estimated in this regard. The first (HL) describes the number of periods (quarters) it takes for the response of inflation to permanently subside below half its initial response. Owing to the fact that the initial response of inflation may be either positive or negative and also because the response function is likely to oscillate between positive and negative values moving towards or away from zero, HL is defined by both the initial and the subsequent absolute values of this function. The second measure (Tmax) gives the length of time (in quarters) before the inflation response reaches its maximum value (in absolute terms). Lastly, the third measure (WR) can be defined as the ratio of the weighted sum of absolute deviations from baseline, with linearly increasing weights, to the corresponding weighted sum of these deviations, with linearly decreasing weights. In case absolute deviations, according to this definition, reach their peak values in the first half of the 20-period window considered and decline thereafter, WR is less than 1, whereas the opposite occurs when the highest deviations are mainly concentrated in the second instead of the first half of this window. A WR value of around 1 implies a relatively uniform or symmetric inflation response in the window considered, and thus it is somehow difficult to tell whether such response converges or diverges.[8]

All the foregoing measures try to summarise in a single statistic the features of inflation dynamics and persistence following an exogenous shock, which is obviously difficult and rather simplistic. In some cases, the proposed measures may even convey an inconclusive or even misleading pic-

5 The future nominal exchange rate depends on the spread between foreign and domestic interest rates, as well as on the risk premium.

6 To approximate results including monetary policy and trade spillover effects, each central bank was requested to run an additional set of simulations in isolated mode. These involved the following shocks: a change in short-term interest rates, a change in international demand, a change in the exchange rate and a change in international prices).

7 A detailed description of this procedure is given in Berben *et al*. (2005).

8 WR extends the persistence measure proposed in Lunneman and Matha (2004) by allowing for the form and the value range of the response function.

ture of inflation persistence. Such statistics can inevitably capture only a part of the whole dynamic response of inflation. For example, a very low value of Twax implies that the maximum deviation from baseline occurred immediately after the shock and gives no indication of whether high inflation is to persist or will somehow converge towards its baseline levels (monotonic convergence, exponential convergence, fluctuating convergence, etc.).

Hence, such statistics should be used as simply indicative of the persistence in the response of inflation to exogenous influences and, preferably, in conjunction with the study of the plot of the response function over the 20-period window considered.

4. Empirical results

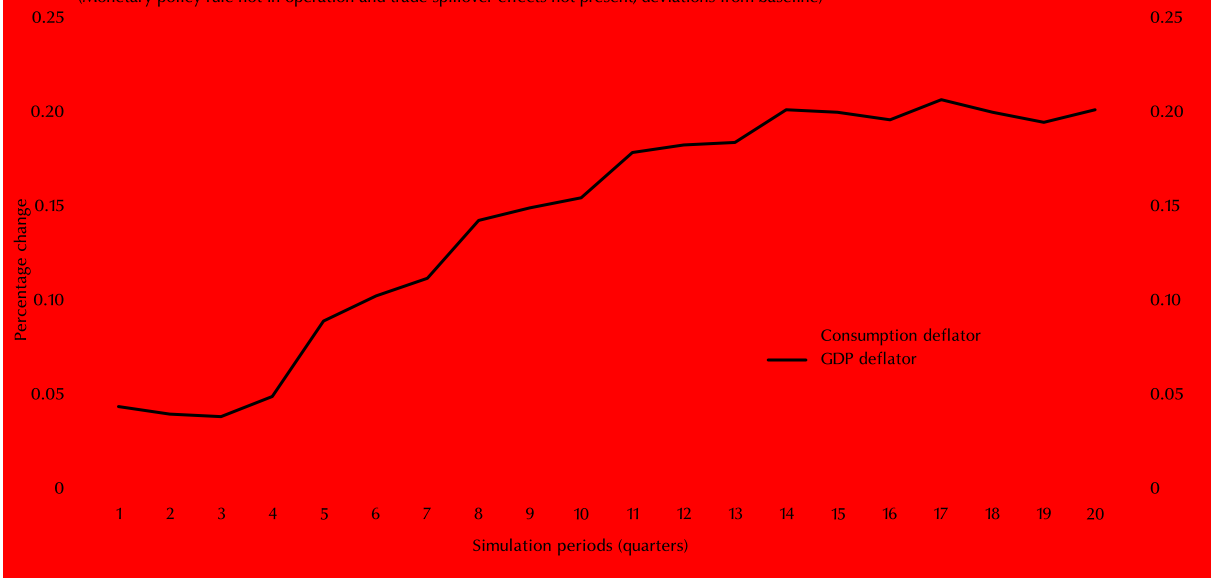
The simulation exercises described in section 3.1 were run using the quarterly econometric model (the Greek-mcm) of the Economic Research Department of the Bank of Greece. The Greek-mcm is one of the models that make up the multi-country model of the ECB.[9] It is structured so that, during its operation, it is linked to the other models of the Eurosystem central banks. It can also operate in an isolated mode however, as it does in the simulations conducted herein.

The quarterly econometric model of the Bank of Greece is a typical total supply and demand model. In the short term, output is driven by demand, while its long-run equilibrium is determined by supply factors. Factor (capital and labour) demand functions and the total short-run supply curve of the Greek economy are derived in a consistent manner by resolving the maximisation problem of a representative firm which operates under imperfect competition and uses a Cobb-Douglas production technology. Deviations from the long-run equilibrium set in motion a stock-flow adjustment mechanism, which, combined with the change in the relative prices of domestic versus foreign tradable production, drives back output to its potential level, thereby ensuring a match between supply and demand. The application of a Taylor rule, alone or in combination with a fiscal rule, speeds up this process.

As discussed in detail in the previous section, five different shocks were performed using the quarterly econometric model of the Bank of Greece. Each simulation had a five-year horizon (in quarters), or 5 x 4 = 20 quarters. Also, for each of them alternative hypotheses were made regarding the operation of some monetary policy rule, the resulting endogenous exchange rate through UIP, as well as the existence of trade spillover effects. The analytical results of each simulation under the alternative hypotheses are reported in the following paragraphs. In particular, the focus is on the study of the percentage deviations of the private consumption and the GDP deflator from the baseline scenario (the scenario in which there is no exogenous shock) over a 20-quarter period after each exogenous shock. The inflation persistence measures defined in the previous section were also estimated on the basis of these deviations (as these had been calculated for

9 The multi-country model of the ECB (MCM) is made up of the national econometric models of the euro area. It is designed so that all its national components share the greatest possible common structure. It normally operates in linked mode (i.e. with all its national components linked together) and with euro area-wide policy rules.

Chart 1a
Fiscal shock: the reaction of inflation to a permanent increase in government consumption by 1% of GDP
(Monetary policy rule not in operation and trade spillover effects not present, deviations from baseline)



Greece and the euro area) and they too will be presented below.

Chart 1a illustrates the impact of the fiscal shock on the GDP and the consumption deflator. In particular, it shows the difference between the rates of change in the two deflators following a permanent increase in government consumption by 1% of GDP and in the absence of a monetary rule and trade spillover effects. The response of inflation to this exogenous shock is similar, whether measured by the GDP deflator or the consumption deflator, although in the latter case it is slightly higher in absolute terms. Specifically, it is loose in the first four quarters of the simulation window, almost steadily building up thereafter. The highest deviation of inflation rates occurs after 17 quarters and there is no clear indication of any subsequent decline. Hence, all evidence seems to suggest that this specific type of fiscal shock, the demand shock, leads to highly persistent and deviating inflation. Allowing for a monetary rule and trade spillover effects does not seem to alter the character of inflation persistence during the entire simulation period (see Chart 1b),[10] at least as indicated by the figures of Table 1, which gives the values of the three estimated persistence measures.[11] Indeed, HL and Tmax take their highest possible value (20) and WR largely exceeds 1, recording a

10 Indeed, conducting the simulations in an environment of policy rules and trade spillover effects does not seem to modify our main conclusions regarding inflation persistence. In greater detail, the inclusion of trade spillover effects in the calculations leaves practically unchanged the results of the simulations, whereas if an endogenous euro area monetary rule is additionally switched on, then the response of inflation is in general slightly dampened, as would be expected. For this reason, we will henceforth present the results of each simulation under all alternative hypotheses (full scenario).

11 The Annex table gives for each simulation (under all alternative intermediate hypotheses) the values of persistence measures, as estimated for Greece and the euro area. Table 1 presents how these figures change when examining the full scenario under all final hypotheses, i.e. when a monetary rule, trade spillover effects and a UIP condition for the exchange rate are included in calculations.

Chart 1b

Fiscal shock: the reaction of inflation to a permanent increase in government consumption by 1% of GDP

(Monetary policy rule in operation and trade spillover effects present, deviations from baseline)

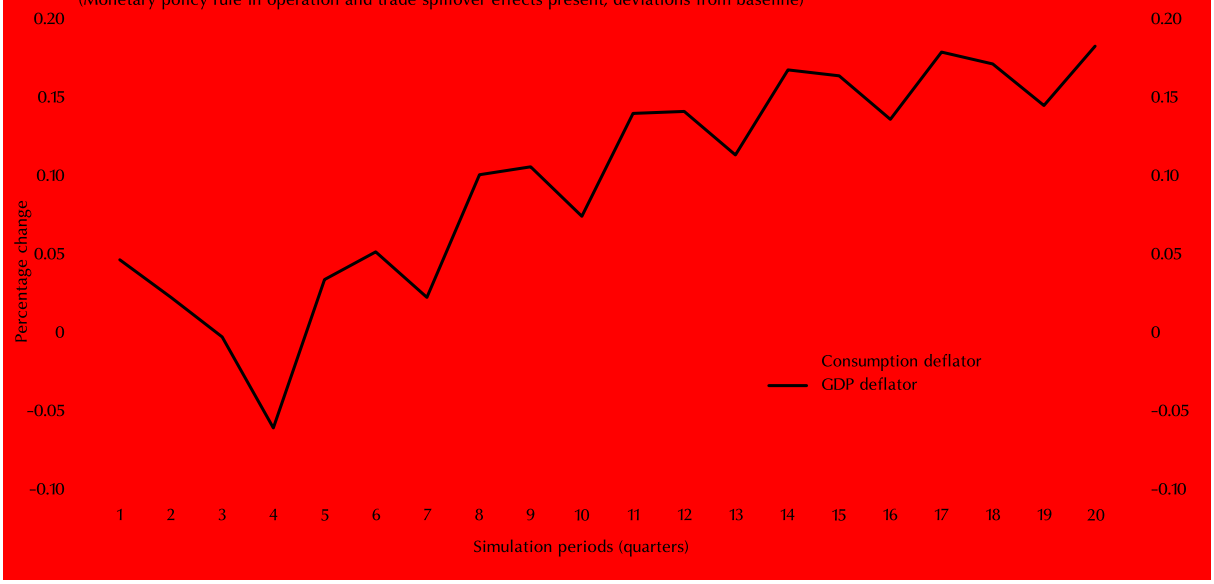


Table 1

Measures of inflation persistence in Greece and in the euro area

		Greece			Euro area		
Exogenous shock	Deflator	*HL*	*Tmax*	*WR*	*HL*	*Tmax*	*WR*
Fiscal shock	Consumption deflator	20	20	2.0	20	11	1.2
	GDP deflator	20	20	1.8	11	1	1.0
Oil price shock	Consumption deflator	14	7	0.6	2	1	0.4
	GDP deflator	14	4	0.5	3	1	0.4
Total factor productivity shock	Consumption deflator	20	8	0.9	15	1	0.8
	GDP deflator	20	8	0.9	10	1	0.7
Indirect tax shock	Consumption deflator	1	1	0.8	1	1	0.2
	GDP deflator	1	1	0.7	1	1	0.2
Social security contribution shock	Consumption deflator	20	9	1.2	7	2	0.5
	GDP deflator	20	8	1.2	2	1	0.4

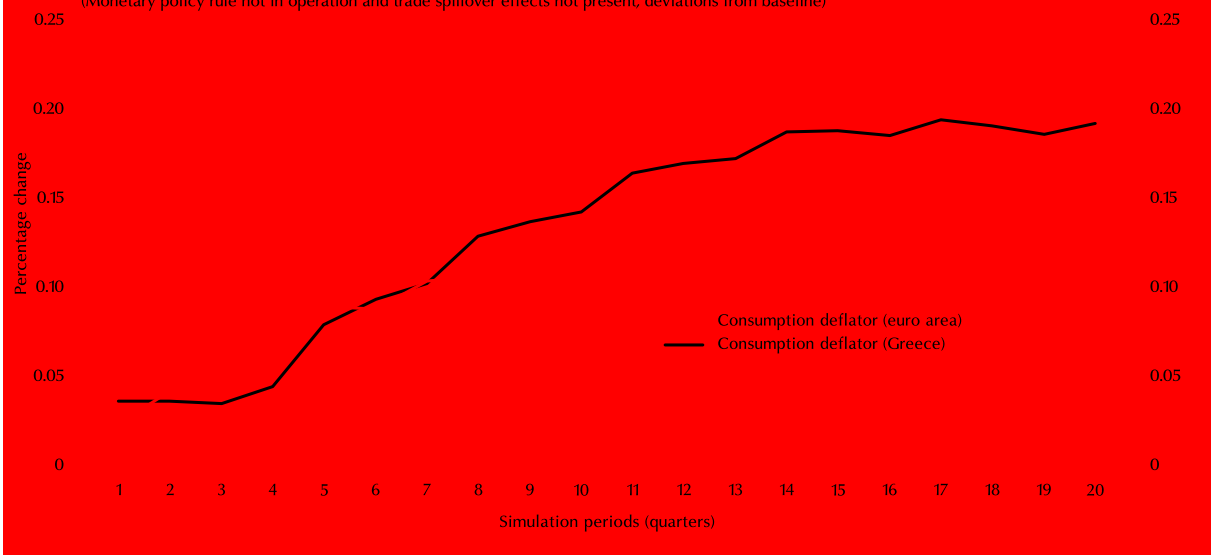
high degree of inflation persistence for Greece following this specific shock.

A similar conclusion arises for the large majority of the other euro area countries and for the euro area as whole. In the euro area, the rate of change in the private consumption deflator constantly rises until it reaches a peak after 11 quarters, and thereafter stays high, although slowly declining, until the end of the simulation window. The GDP deflator follows a similar path. After returning to its baseline value for just one period after the initial shock, it

Chart 1c

Fiscal shock: the reaction of inflation to a permanent increase in government consumption by 1% of GDP: Greece and the euro area

(Monetary policy rule not in operation and trade spillover effects not present, deviations from baseline)



subsequently deviates from it until the 11th quarter and thereafter stays high, albeit falling.[12]

The values of persistence measures (presented in Table 1 and in the Annex table) suggest that the persistence in the response of inflation to the fiscal shock is stronger in Greece than in the euro area. The same conclusion can be drawn from the data in Chart 1c which presents the response of the consumption deflator to the fiscal shock in Greece compared with euro area.

Inflation response to an oil price shock involving a permanent increase in oil prices by 10% is "rather persistent but not deviating", as indicated by the outcomes of the second simulation. The rates of change in the GDP and the consumption deflator rise and stay high approximately until the mid-point of the simulation window. Thereafter, however, they seem to return to their base values (see Chart 2). The rates of change in the GDP and the consumption deflator reach their peak values after 7 and 2 periods respectively, while it takes at least 14 periods for the deviation of these deflators to subside below 50% of their initial deviation (Tmax and HL measures, Table 1). In almost all euro area countries, the response of inflation to the oil price shock can be described as non-persistent. At the euro area aggregate level, both deflators converge constantly —and rather rapidly— towards their baseline values,[13] as also indicated by the low values of all estimated persistence measures.

A similar pattern is observed in the response of Greek inflation to a total factor productivity shock

12 The initial reduction of the deviation of the GDP deflator from 0.16% in period (quarter) 1 to 0.004% in period 2 is the reason for the rather misleading picture conveyed by the persistence measures in Table 1 (HL = 11, Tmax = 1 and WR = 1.0). Should these measures be estimated for the period thereafter, they will clearly record a high degree of inflation persistence similar to that recorded by the consumption deflator.

13 This casts some doubt on whether all models are able to reflect in a representative manner the whole range of supply-side effects exerted by oil price changes.

Chart 2

Oil price shock: the reaction of inflation to a permanent increase in oil prices by 10%

(Deviations from baseline)

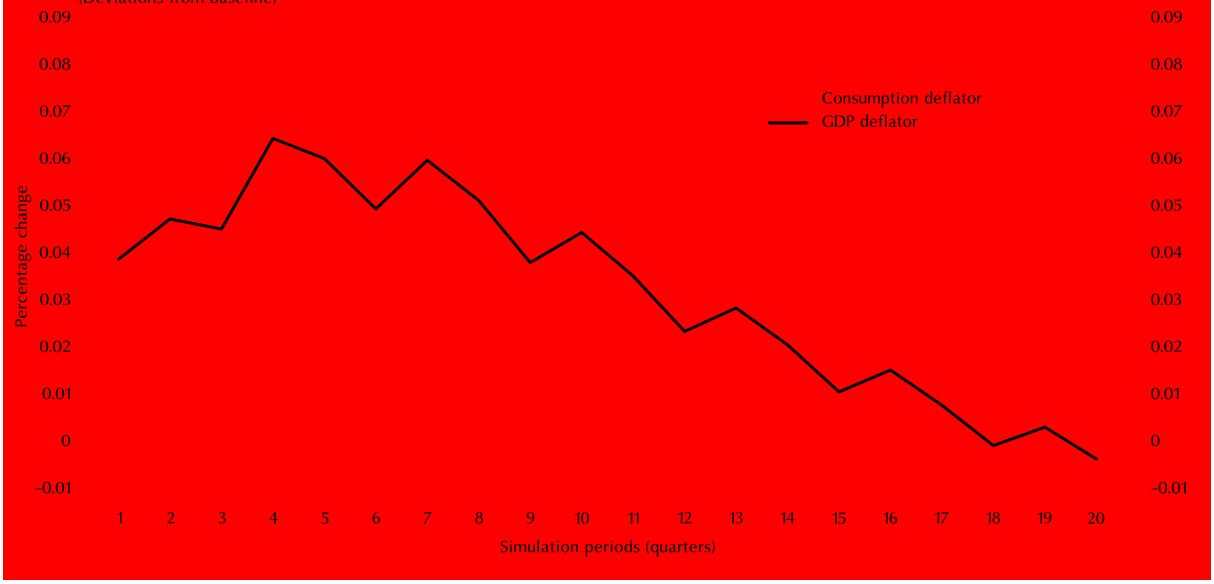
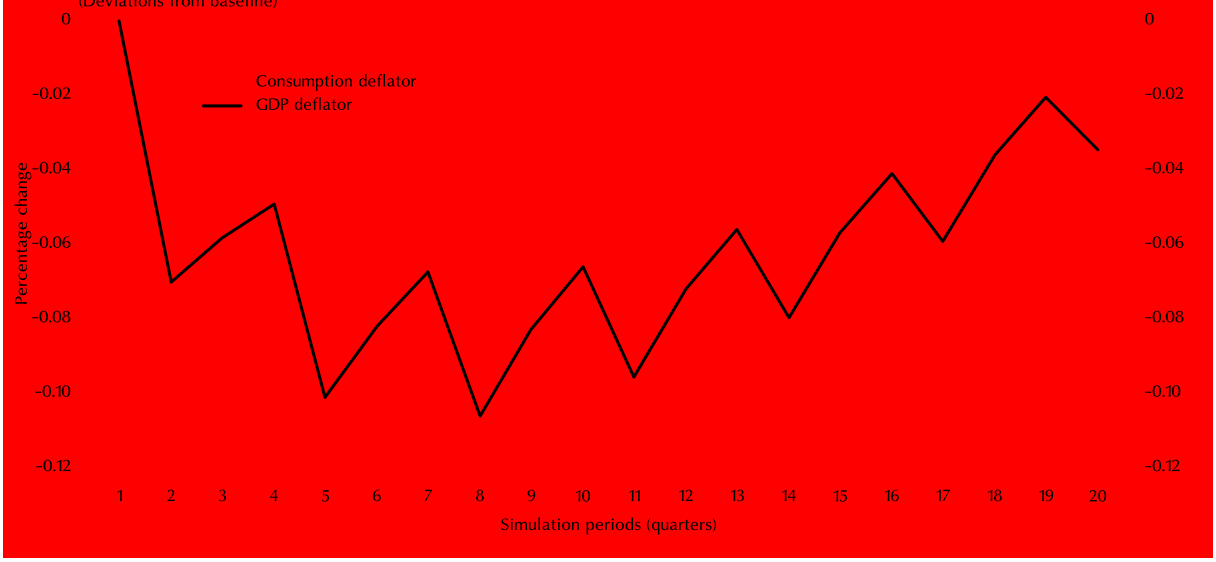


Chart 3

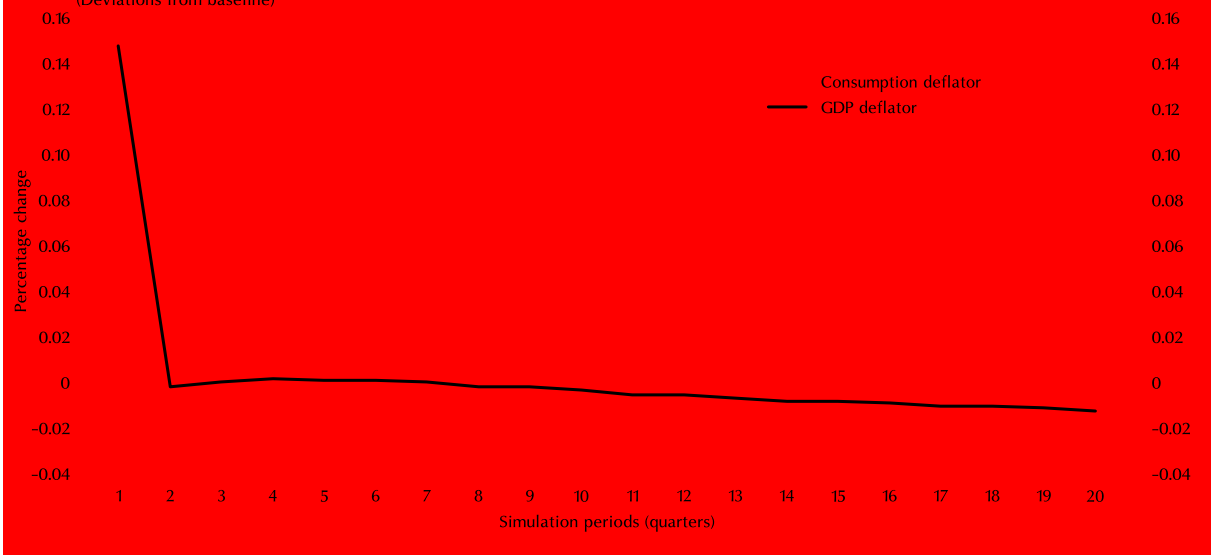
Productivity shock: the reaction of inflation to a temporary increase in total factor productivity that leads to a 1% increase in GDP

(Deviations from baseline)



initially leading to a 1% increase in real GDP. As can be seen in Chart 3, inflation, whether measured by the GDP or the consumption deflator, gradually falls until the mid-point of the simulation window and thereafter converges towards its baseline levels without ever reaching them. Hence, the values of the deflators' response function, as well as those of the estimated measures, place Greece —together

Chart 4
Indirect tax shock: the reaction of inflation to a permanent increase in the indirect tax rate by one percentage point
(Deviations from baseline)



with Austria, Germany, Italy and the Netherlands — in a group of countries in which the deflating impact of the increase in productivity exhibits relative persistence. The response of euro area inflation to the said shock seems to be also alike and relatively persistent. Specifically, while it steadily converges, it keeps staying off baseline levels during most of the simulation window.

The indirect tax shock, which involves a 1% increase in the indirect tax rate, seeks to investigate how inflation responds to an exogenous change in the gap between consumer and producer prices. In other words, it examines how an increase in marginal costs that is not driven by wage growth may affect inflation. According to the results of the simulation, the permanent change in the indirect tax rate does not induce persistent inflation in the Greek economy (see Chart 4 and Table 1). Indeed, the increase in the indirect tax rate by 1% seems to generate sharp cost-push inflation only in period 1, as the rates of change in both deflators already stand close to their respective baseline levels in period 2.[14] This suggests that inflation lacks persistence, given that wage costs remain unaffected. Both deflators converge towards their baseline values immediately after their initial response, while the values of the estimated persistence measures are lower compared with any other shock considered.

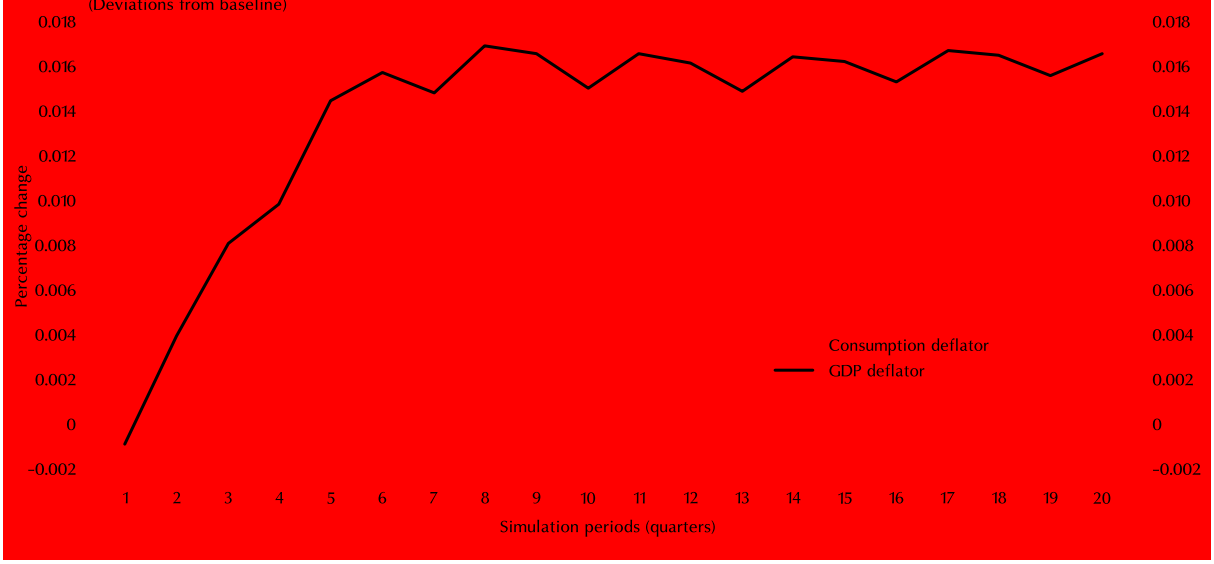
Lastly, the results of the social security shock point out that the permanent change in the employers' social security contribution rate can induce persistent inflation in the Greek economy. Indeed, as a result of the 1% increase in social security contributions, both inflation indicators rise continuously

14 With the exception of the high initial response of inflation over the first quarter, a deviation from baseline values can be seen notably in the second half of the simulation horizon, but even that does not exceed 0.012% in absolute terms.

Chart 5

Social security contribution shock: the reaction of inflation to a permanent increase in the social security contribution rate by one percentage point

(Deviations from baseline)



during the first half of the simulation window and remain at the same high levels thereafter (Chart 5). The GDP deflator follows a similar path to that of the consumption deflator, but the response of the former is relatively more pronounced. The response of inflation to the shock in question is relatively persistent in some other euro area countries too, including Belgium, Germany and Spain. In the euro area as a whole, the deviation of both deflators from baseline, although it is quickly limited compared with its initial level, continues to remain significant during the first half of the simulation window. However, as it further declines thereafter, both deflators return very close to their respective baseline levels.

5. Possible sources of inflation persistence

This section investigates the possible sources of the relatively higher persistence of inflation in Greece. According to Berben *et al.* (2005), and also on the basis of the subjective assessments by the proprietors of the national structural models, the possible sources of inflation persistence should be sought among factors that relate to the functioning of the final product market, the structure and characteristics of the labour market, institutional change and the response of wages to changes in the unemployment rate. In particular, as regards the characteristics of the labour market, we find that the determinants of wage responsiveness to changes in the unemployment rate (e.g. the amount and duration of the unemployment benefit, the bargaining power of trade unions) can sometimes explain the cross-country differences observed in the persistence of the inflation response to the fiscal shock. The almost zero degree of wage responsiveness to changes in the unemployment rate may account, to some extent, for the relatively high persistence of inflation in Greece compared with other countries.

This may also be the case in the rest of the exogenous shocks, with the exception of the change in indirect taxes.

In several countries, the degree of persistence in the response of inflation to changes in productivity and production costs is likely to relate to the wage and unit labour costs responsiveness to these changes. By contrast, in most countries, mark-ups and import prices are not thought to be important regarding inflation persistence. An exception should be made for import prices in the scenario of an exogenous increase in oil prices.

This paper goes a little deeper, trying to empirically assess the validity of the foregoing, shall we say, value statements through the conduct of a series of additional simulations for Greece under alternative values of certain vital-to-inflation persistence structural parameters of this economy. It thus explores, within the framework of the same exogenous shocks referred to earlier (namely the fiscal shock, the indirect tax shock, etc.) how a change in some structural characteristic of the product or labour market may affect inflation persistence. Such structural characteristics include for example: the degree of competition in the domestic market, the response of employment to changes in overall demand and real wages, the responsiveness of wages to price changes, the wage-unemployment elasticity, the degree of autocorrelation of inflation, the formation of expectations, etc.

It is not possible to accurately identify and isolate the channels that account for the persistence of inflation in Greece, nor to conduct here an empirical analysis similar to the analysis of monetary policy transmission[15] carried out within the Eurosystem.[16] To a certain extent, however, the empirical analysis and the alternative simulations presented below provide some evidence on which parameters and mechanisms may be responsible for the relatively higher persistence of inflation in Greece. Also, they help determine the possible implications of structural interventions, as well as decide which direction these interventions should take to gradually reduce inflation persistence to levels similar to those observed in the euro area. Indeed, the efficiency of monetary policy could be significantly improved with the creation of an economy in which the price mechanism responds immediately to economic change. In addition, our findings in this section may lead to some conclusions about the stance of structural policy. It should be noted though that they depend directly on the properties of the econometric model used and thus a different specification of this model, especially as far as wage-price dynamics are concerned, could modify the numerical results.

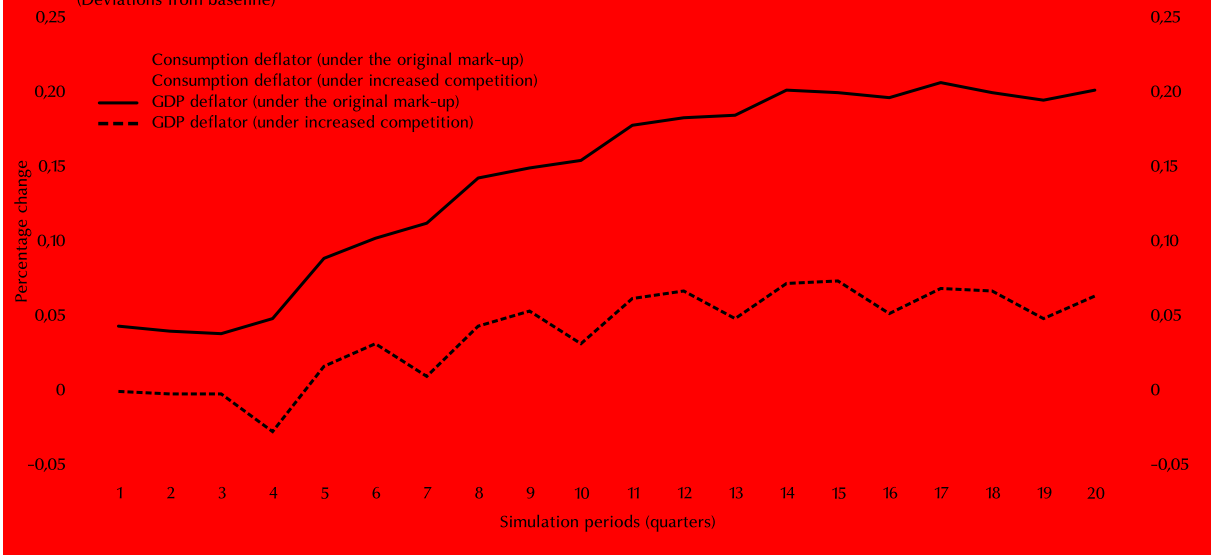
We argue that the degree of competition in the product market is likely to affect persistence in the response of inflation to the various exogenous shocks. In the employed quarterly macroeconomic model of the Bank of Greece, it is assumed that, in the short run, the representative firm operates in monopolistic competition and that it sets the price for its product by applying a fixed

15 On monetary policy transmission and influence channels, see: (i) Van Els *et al.* (2003): euro area and (ii) Zonzilos (2002): Greece.
16 This is because the persistence and dynamics of inflation are the outcome of nominal and real rigidities which are found across all markets of the economy. Identifying which channels generate persistence would require the system to be entirely redefined and the lags that are presumably responsible for these rigidities to be eliminated. Any such change, however, would render the alternative simulations incomparable.

Chart 6

Fiscal shock: the reaction of inflation under an alternative hypothesis for the intensity of product market competition

(Deviations from baseline)



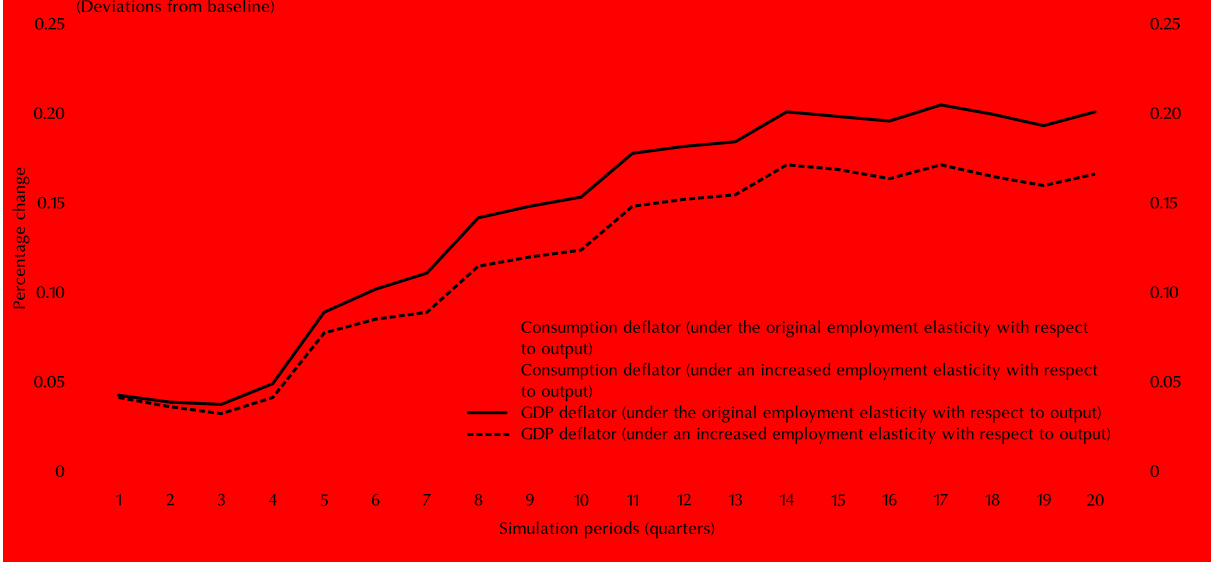
mark-up to the variable marginal cost. The mark-up parameter, which also essentially denotes the distance from full competition in the product market, is estimated at 1.8 for the Greek economy. In the light of these elements, we repeated the five core simulations by reducing this parameter by around 10% to 1.6, thereby assuming a greater degree of competition for the Greek economy.[17] The results of the fiscal shock simulations, under both the original and the alternative value of the mark-up parameter, are presented in Chart 6. It is clear that inflation persistence, and particularly its responsiveness to the permanent exogenous increase in government consumption, would be markedly lower if the Greek economy operated under more competitive conditions. In other words, all evidence seems to suggest that increasing competition in the product market could by itself mitigate the persistence of Greek inflation. Similar is the case for the other exogenous shocks too.

In the employment function of the quarterly econometric model of the Bank of Greece total output elasticity of employment is rather low (0.15). The poor responsiveness of labour demand to output change is one of the main setbacks to employment which does not seem to keep up with the high growth rates enjoyed by the Greek economy in recent years. It was therefore felt advisable to explore whether possible structural interventions in the labour market[18] intended to make employment more sensitive to output changes would also affect persistence in

17 The mark-up in principle affects the price level, but it is also inversely associated with demand elasticity, which in turn affects the level of the real equilibrium wage. The simulation in question takes into account both the change in the mark-up and the resulting change in demand elasticity. Nevertheless, given that the mark-up parameter is a "pure" number and that its exact level is devoid of any structural content, this alternative simulation reflects no particular structural intervention of any extent.

18 Such are, for example, interventions aimed at simplifying the regulatory framework governing employment and lay-offs in enterprises.

Chart 7
Fiscal shock: the reaction of inflation under an alternative hypothesis for the responsiveness of employment to output changes
(Deviations from baseline)



the response of inflation to exogenous shocks. The results of the new fiscal shock simulation, which was conducted with double the level of the relevant elasticity, showed a slight drop in inflation persistence (see Chart 7). This improvement seems, however, rather negligible compared with that achieved by increasing competition in the product market, as analysed in the preceding paragraph.

The wage function of the macroeconomic model used rests on the hypothesis that, in the long term, real wages are equal to labour productivity. In the short term, however, wages may deviate from their long-run equilibrium due to movements in the unemployment rate (short-run Phillips curve effects), some adjustment in production costs or changes in the bargaining power of employees relative to employers. For instance, a drop in the unemployment rate, because it decreases the chances of being or remaining unemployed, may boost wages. Indeed, in the employed model, the rate of change in wages is positively correlated to the year-on-year rates of change in wages and prices, as well as to the rate of change in productivity. A very small negative correlation between wages and the unemployment rate is also recorded, implying the existence of some short-run Phillips curve in the Greek economy.

To assess the extent to which the adjustment of wages to price movements and the wage-unemployment relationship generate persistence, we ran two further simulations. In the first, the elasticity of wages with respect to previous period inflation was reduced to about half its original level, or from 0.378 to 0.20 (see Chart 8). In the second, the loose relationship between wages and the unemployment rate was tightened by a doubling of the respective coefficient (see Chart 9). As can be seen in both charts (which present the

Chart 8

Fiscal shock: the reaction of inflation under an alternative hypothesis for the price responsiveness of wages

(Deviations from baseline)

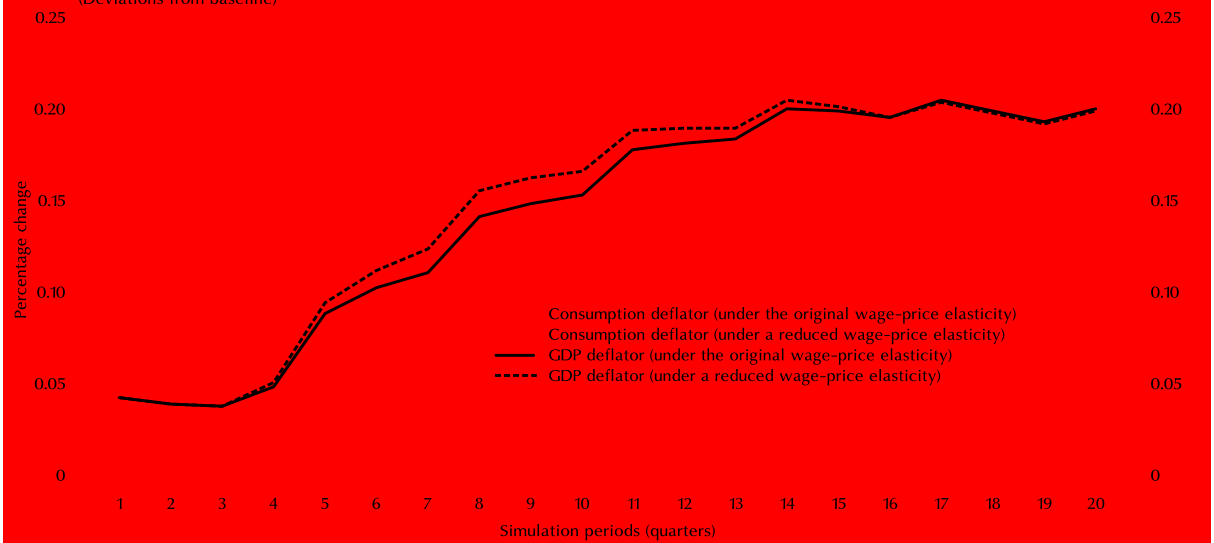
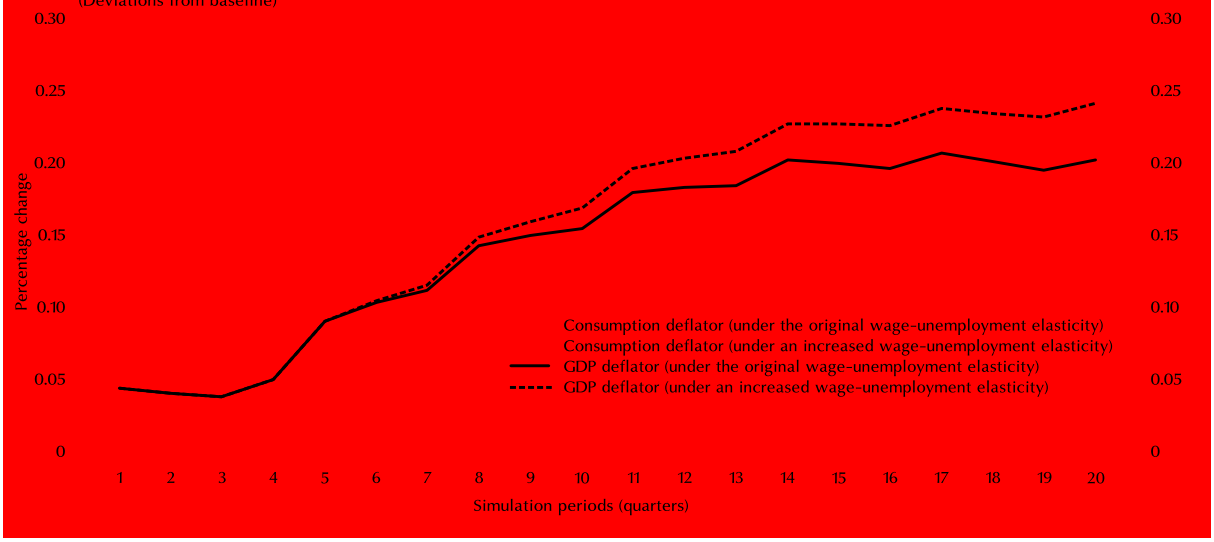


Chart 9

Fiscal shock: the reaction of inflation under an alternative hypothesis for wage responsiveness to changes in the unemployment rate

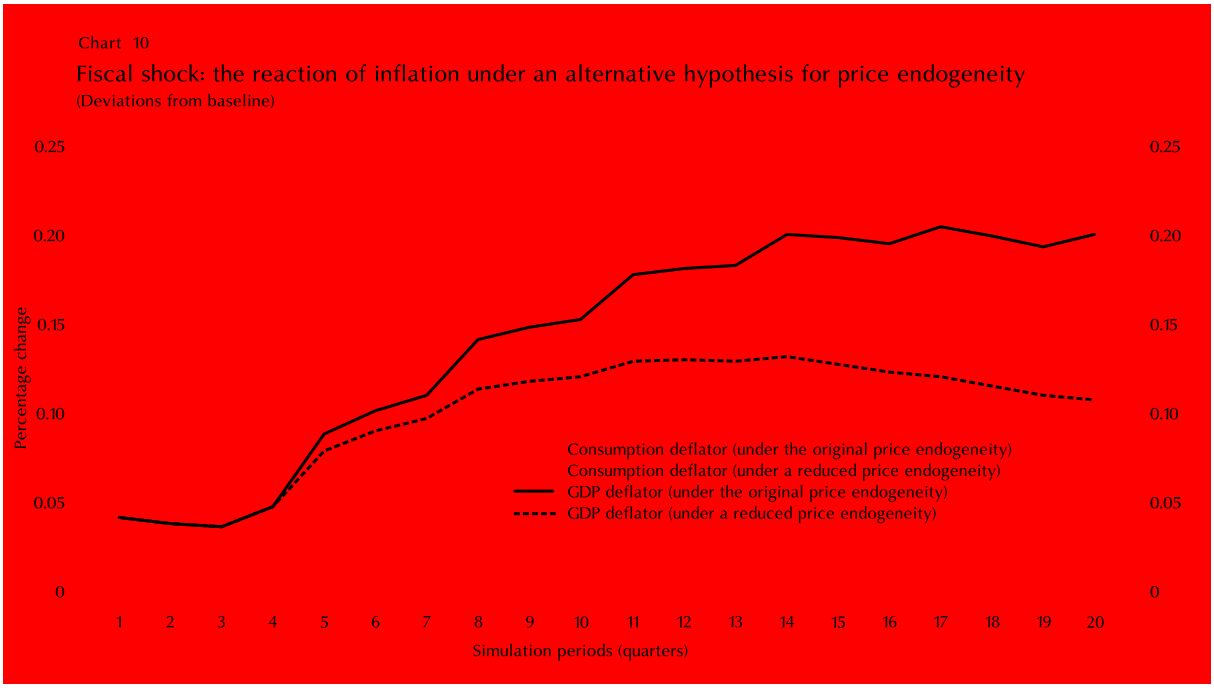
(Deviations from baseline)



results of the exogenous fiscal shock), changing the values of these parameters has no material effect on the persistence in the response of inflation. Similar is the case for the other exogenous shocks considered.[19]

From the simulations discussed above it is clear that the main responsibility for the relatively

19 The results of these simulations are available on request from the authors.



higher persistence of inflation in Greece cannot be attributed to some structural characteristic of the labour market. This does not mean, however, that labour market conditions or wage growth are not significant factors in accounting for the evolution of Greek inflation. The importance of unit labour costs as determinants of inflation persistence was also demonstrated by the results of the simulation which is concerned with a permanent increase in social security contributions (see Chart 5). The key role played by labour costs in determining the level of inflation is also empirically supported by a set of simulations which have been recently run by the Bank of Greece.[20] It should be stressed, however, that the conclusions reached here refer only to the persistence in the response of inflation to exogenous shocks, not to its actual levels.

By contrast, we maintain that increasing the competition in the product market seems to markedly limit inflation persistence. Furthermore, almost all the IPN studies on inflation persistence, conducted with all kinds of models, conclude that the historical path of inflation also largely determines its persistence. According to Hondroyiannis and Lazaretou (2004), the Greek inflation too depends heavily on its past series (time series dependence). This conclusion is underpinned by our findings. Indeed, we repeated the fiscal shock by reducing the degree of time series dependence. Chart 10 shows the drastic impact of this specific intervention on the persistence of inflation. If there is a significant backward-looking component to the formation of inflationary expectations, then, to reduce inflation persistence, it is essential that these expectations should be anchored at low levels.

20 Bank of Greece, *Monetary Policy – Interim Report,* October 2005, pp. 132-35.

6. Summary and conclusions

The issues pertaining to inflation and notably to the response of prices to changes in the various economic parameters are of particular interest at least within the Eurosystem. In this regard, the European Central Bank, in co-operation with the national central banks of the euro area, has recently set up an ad hoc network to focus on inflation persistence. In the frame of this network, price changes were assessed from the standpoint of firms' price-setting policy, through the use of raw data at the product, service or corporate level, as well as from the standpoint of macroeconomic relationships in the whole economy, through the use of specialised macroeconomic models. The latter was also the case in this paper, the objective of which was to investigate the response of Greek inflation to different types of changes in economic conditions that affect demand, production costs and/or supply conditions, as well as the persistence of this response. Besides this investigation, we also attempted a diagnostic analysis of the possible sources of inflation persistence, by conducting a series of standard simulations under alternative values of critical-to-inflation persistence structural parameters of the Greek economy.

Our analysis showed that the permanent increase in government consumption (the fiscal shock) generates more persistent (and rather accelerating) inflation than any other exogenous shock. The implementation of an endogenous monetary policy in the form of a monetary rule and/or the existence of trade spillover effects seem unable to alter the character of inflation persistence during the entire simulation window. It should be noted that this conclusion does not only apply to Greece, but also to the large majority of the other euro area countries and to the euro area as a whole. Inflation caused in Greece by the permanent increase in oil prices can be characterised as "persistent but not accelerating"; the GDP and the consumption deflator remain at high levels or rise until the mid-point of the simulation window and converge towards their baseline levels thereafter. By contrast, in almost all the rest of the euro area, the response of inflation to this shock lacks persistence. Turning again to Greece, a similar pattern to the one just described can be found in the response of inflation to the change in total factor productivity; indeed, while inflation declines until the mid-point of the simulation window, thereafter it gradually returns to its baseline levels. In Greece, in most of the other euro area countries and in the euro area as a whole, the permanent change in the indirect tax rate does not lead to persistent inflation, as wage costs remain unaffected. By contrast, the permanent change in the employers' social security contribution rate and the resulting change in labour costs induce persistent inflation both in Greece and in several other euro area countries.

Our investigation of the possible determinants of inflation persistence in Greece through the conduct of a series of alternative simulations concluded that the primary source of inflation persistence in Greece is the lack of competition. If this is so, policies aimed at reinforcing and securing free competition in various markets can be expected to considerably help in mitigating inflation persistence in Greece.

Paradoxically, a number of structural parameters that chiefly relate to the functioning of the labour market, e.g. the speed of employment response

to changes in output and overall demand, the price responsiveness of wages, the wage-unemployment elasticity, etc. do not seem important in explaining the relatively higher persistence of Greek inflation. But, this in no case means that labour market conditions and wage growth do not play a significant part in the evolution of Greek inflation which continues to exceed that of the euro area. Besides, the crucial role played in inflation persistence by unit labour costs was evidenced by the outcomes of the simulation which was concerned with the effects of a permanent increase in social security contributions. Moreover, the importance of labour costs in determining inflation levels (see footnote 20) has also been corroborated by a number of simulations recently run by the Bank of Greece. It should be stressed, though, that the conclusions reached here refer only to the persistence in the response of inflation to exogenous shocks, not to its actual levels.

Furthermore, in Greece as in most of its euro area counterparts, inflation persistence is found to be mainly intrinsic. Hence, central banks have a crucial role to play in anchoring inflationary expectations at low levels if inflation persistence is to be mitigated.

Annex

Measures of inflation persistence in Greece and in the euro area (under alternative simulation settings)

		Original data			With trade spillover effects			With trade spillover effects and a monetary policy rule in operation, UIP condition for the exchange rate not in operation		
Exogenous shock	Deflator	*HL*	*Tmax*	*WR*	*HL*	*Tmax*	*WR*	*HL*	*Tmax*	*WR*
A. GREECE										
Fiscal	Consumption deflator	20	17	1.6	20	20	1.7	20	17	1.6
shock	GDP deflator	20	17	1.6	20	17	1.6	20	14	1.5
Oil price	Consumption deflator	14	7	0.5	14	7	0.5	13	7	0.5
shock	GDP deflator	14	4	0.5	13	4	0.5	13	4	0.5
Total factor	Consumption deflator	20	8	0.9	20	8	0.9	20	8	0.9
productivity shock	GDP deflator	20	8	0.9	20	8	0.9	20	8	0.9
Indirect tax	Consumption deflator	1	1	0.5	1	1	0.7	1	1	0.9
shock	GDP deflator	1	1	0.5	1	1	0.7	1	1	0.9
Social security	Consumption deflator	20	20	1.3	20	8	1.2	20	8	1.0
contribution shock	GDP deflator	20	8	1.3	20	8	1.2	20	5	1.0
B. EURO AREA										
Fiscal	Consumption deflator	20	15	1.3	20	15	1.3	20	9	0.9
shock	GDP deflator	20	14	1.2	20	14	1.2	20	7	0.8
Oil price	Consumption deflator	2	1	0.3	2	1	0.4	2	1	0.4
shock	GDP deflator	8	1	0.4	4	1	0.4	3	1	0.4
Total factor	Consumption deflator	18	1	0.8	18	1	0.8	12	1	0.7
productivity shock	GDP deflator	17	2	0.8	17	2	0.8	11	2	0.7
Indirect tax	Consumption deflator	1	1	0.2	1	1	0.2	1	1	0.2
shock	GDP deflator	1	1	0.2	1	1	0.2	1	1	0.2
Social security	Consumption deflator	10	2	0.6	8	2	0.6	7	2	0.4
contribution shock	GDP deflator	7	2	0.5	7	2	0.5	2	2	0.3

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External financing, growth and capital structure of the firms listed on the Athens Exchange*

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1. Introduction

In their effort to maximise value, firms need to select the right form of financing for their investment plans. In this respect, a basic choice they make relates to the division of their financing needs between debt and equity, i.e. to their capital structure.[1]

Theoretical and empirical studies on the factors shaping corporate capital structure abound in the literature.[2] The categorisation of firms according to industry or country of activity lies behind the relatively large number of theoretical models attempting to analyse corporate capital structure. These models examine the various forms of financing of corporate investment plans, such as external debt and new equity issues, and determinants of this financing, such as taxation, profitability, risk and asymmetrical information. In general, the theoretical models developed so far only explain some aspects of corporate policy regarding financing. Moreover, given that empirical findings often invite contradicting conclusions, further analysis in this field is deemed necessary.

This study examines the relationship between a firm's actually observed growth rate (as measured by its rate of change in sales) and the maximum growth rate attainable on the basis of the internal

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1 Capital structure is defined as the way the capital of a firm is divided between debt and equity, and therefore it is directly related to the extent of its external financing. For details concerning the variable used in this study to analyse capital structure, see Section 3.2.

2 For an extended overview of the relevant literature, see Harris and Raviv (1991).

and external (short-term and long-term) financing of its corporate investment plans, and analyses the factors determining (short-term and long-term) corporate capital structure, using, among other variables, some that —to our knowledge— have not been employed so far in analysing Greek firms.

The study focuses on Greek non-financial firms listed on the Athens Exchange (Athex) in the period 1998-2002. There were 142 such firms in 1998, and their number has risen to 265 in 2002. Aside from analysing these firms as a whole, the study separately examines as well two individual samples of firms depending on the time their shares were listed on the Athex, i.e. (i) prior to 1998 and (ii) between 1998 and 2002. It should be noted that in this study external financing refers to total (short-term and long-term) corporate liabilities (debt). Bank loans represent the bulk of such liabilities, while other forms of external financing, such as new equity issues, are not examined.

The empirical results show that only a small fraction of these firms were in a position to finance their growth exclusively with internal resources, while these findings vary depending on the firms' size. Furthermore, for those firms that had to resort to external financing, short-term forms of financing were relatively more favoured than long-term ones. The needs for further short-term debt are not considerably different between small and large firms. In contrast, the needs for further long-term debt are clearly greater for the large than for the small firms. As regards the determinants of capital structure, for the firms examined the effect of profitability is negative and statistically significant – a well-anticipated result, in line with that of other studies, which supports the "pecking order" theory.[3] On the other hand, tangible assets and firm size have a positive and statistically significant effect, while short-term assets have a positive effect on corporate short-term external financing only.

The study is structured as follows: the second section presents a brief review of the Greek and the international literature regarding the analysis of corporate financing resources and the determinants of corporate capital structure. The third section describes the methodological approach to the investigation of the relationship between corporate growth rate and the necessary external financing, while it also presents the theoretical backbone for the examination of capital structure determinants. The fourth section analyses the data used in this study along with their evolution in the 1998-2002 period. The fifth section states the findings regarding the relationship between growth and external financing, as well as the empirical results of the estimation of external financing determinants. Finally, the sixth section concludes.

2. Literature review

2.1 Constrained corporate financing and growth

The relationship between a firm's growth and its ability to utilise alternative financing resources has been extensively dealt with in the relevant literature (see King and Levine, 1993; Levine and Zervos, 1998). Particularly interesting is the problem of the constraints a firm faces when its internal resources, i.e. its retained earnings, do not

3 According to this theory, corporate financing practice follows a specific order: internal financing —external debt— new equity issue. For more details, see Section 2.2.

suffice to finance its investment plans and it therefore has to resort to external sources of financing, either through the capital markets (new share or bond issues) or through credit institutions (bank loans). In countries where financial markets are not adequately developed, firms come across serious problems when trying to finance potentially profitable activities (Demirgüç-Kunt and Maksimovic, 1996). However, even in developed economies, corporate financing through bank —mainly long-term— loans is hindered by various factors, including asymmetrical availability of information (which leads credit institutions to a selective allocation of credit, or firms to the issuance of underpriced shares or bonds), low creditworthiness of firms, high borrowing costs and —possibly— negative expectations regarding demand for their products.

The above limitation, however, also depends on the extent of internal resources firms can use to finance their investment plans. According to Fazzari *et al.* (1988), the strong link between long-term investment and internal financing is an indication of the financing constraint firms face – a view disputed by Kaplan and Zingales (1996).

The approach by Demirgüç-Kunt and Maksimovic (1998) —which we follow in the first part of this study[4]— uses a static model of financial planning[5] for each firm, in order to estimate the differential between the actually observed growth rate and the maximum one attainable through (short-term and long-term) external debt subject to certain constraints. Based on a sample of 30 countries, among other things the above study concludes that —save for only five of those countries— short-term external financing is more important than the long-term one.

2.2 Determinants of corporate capital structure

The pioneering study by Modigliani and Miller (1958) —hereinafter "M-M"— gave considerable impetus to the theoretical examination of optimum corporate capital structure. According to M-M, every firm has the ability to finance investments of positive net present value. In case the funds required for such investment exceed its available internal resources, the firm may resort to banks or capital markets for external borrowing, while its capital structure does not affect its financial value (capital structure irrelevance).

Later studies were based on more realistic assumptions than the M-M model. Specifically, some examined the effect of taxation on corporate capital structure, as interest paid for external debt is deducted from taxable revenue, offering firms an incentive for such borrowing (Modigliani and Miller, 1963; Miller, 1977). However, the weight of this factor diminishes when firms use alternative ways of taxable revenue reduction, such as depreciations (Angelo and Masulis, 1980). Furthermore, other studies examined the effect of bankruptcy costs (Stiglitz, 1972), as well as of agency costs, i.e. the costs of any conflicts of interest between the management and the shareholders (Jensen and Meckling, 1976).

Particularly interesting is the hypothesised effect of asymmetrical availability of information on corporate capital structure (Myers, 1984; Myers and Majluf, 1984). According to this assumption, the financing practice of a firm is a result of the asymmetry in the information available to its manage-

4 See Sections 3.1 and 5.2.
5 See footnote 8.

ment (insiders) and to those participating in its financing (outsiders). For instance, when the management of a firm proceeds to a new equity issue in order to draw funds for financing its investments, capital market investors perceive this move as a negative sign, on the basis of the estimation that the management of that firm, being better informed as to its real value, issues overpriced shares. Similarly, a negative effect on a firm's share price, although to a lesser degree, is usually entailed by announcements about increased indebtedness, since investors, as opposed to managers, lack any precise or sufficient data on the firm's real borrowing needs. In contrast, the financing of a firm's investment plans through internal resources (retained earnings) understandably reduces information asymmetry and has a positive effect on its share price.

Based on the aforementioned assumptions, Myers (1984) and Myers and Majluf (1984) concluded that corporate financing practice follows a specific order (i.e. internal financing —external debt— new equity issue), a view known as the *pecking order theory*. However, relatively small firms, as well as those active in economies of high information asymmetry, are reluctant to fully implement this scheme and choose to finance their growth using internal resources only. Not without objections to some of the assumptions underlying the pecking order theory (Helwege and Liang, 1996), several studies present results in support of it (see Rajan and Zingales, 1995; Jordan *et al.,* 1998; Watson and Wilson, 1998). Still, the final answer to the question of how firms decide on their financing mix is provided by empirical research.

Thus, according to empirical studies, the main factors shaping a firm's capital structure are its profitability, its size, its "growth prospects"[6] and its tangible assets.

Profitability is closely linked to the pecking order theory, since high profitability firms primarily use internal resources for financing their investment plans (Myers and Majluf, 1984). Consequently, the relationship between profitability and external financing is expected to be negative. This relationship constitutes a major finding in the literature (Kester, 1986; Titman and Wessels, 1988; Rajan and Zingales, 1995; Bevan and Danbolt, 2002).

The level of a firm's external financing seems to increase with its size. Ferri and Jones (1979) argue that large firms have easier access to credit institutions, and thus enjoy relatively better borrowing terms. Also, Titman and Wessels (1988) and Rajan and Zingales (1995) maintain that the size of a firm is inversely related to its bankruptcy probability, while Marsh (1982) and Bennett and Donelly (1993) confirm the positive relationship between the size of firms and their level of debt.

On the basis of the pecking order theory, firms with growth prospects, which face increased financing needs, have to use internal resources or else to proceed with an equity issue, so as to reduce the risk of conflicts of interest between the management and the shareholders (Junk *et al.,* 1996). The findings of several studies corroborate this theory, as they reveal a negative relationship between financing and growth prospects, irrespective of the estimation

6 The growth prospects of firms with shares quoted on regulated stock markets are usually proxied in the international literature by their market to book value ratio.

method used or the country studied (Titman and Wessels, 1988; Rajan and Zingales, 1995). Nevertheless, some research studies find that growth prospects have a positive relationship with short-term debt (Bevan and Danbolt, 2002), or even with total (short-term and long-term) debt (Michaelas *et al*., 1999).

As tangible assets constitute for banks a reliable means of securing their loans to enterprises, they are considered an important determinant of the level of corporate external financing (Stiglitz and Weiss, 1981). Most empirical studies find a positive relationship between external financing and tangible assets (Bradley *et al.,* 1984; Rajan and Zingales, 1995), whereas Titman and Wessels (1988) report a statistically insignificant relationship between these two variables.

The relevant literature with data on Greek firms is limited, does not examine the necessity of external financing and focuses only on the study of the determinants of total capital structure (indebtedness). Voulgaris *et al.* (2002, 2004) studied capital structure and the factors affecting it, using a sample of Greek firms active in industry and in trade. According to their findings, the capital structure of the firms studied depends on the level of their assets, their degree of asset utilisation and their profitability. In addition, with respect to firm size, it is large firms that are affected more by the efficient management and growth of fixed assets, while efficiency in the management of accounts payable and the level of fixed assets have a significant effect on the capital structure of *smaller* firms. Vasiliou *et al.* (2004) studied the determinants of capital structure of a sample of firms listed on the Athex and concluded that their external financing is positively related to their ratio of tangible assets to total assets, and negatively related to their profitability. Furthermore, larger firms showed a higher debt level than smaller ones. Overall, the findings of the Greek literature are in line with the pecking order theory, but this literature is insufficient as regards the variables explaining total capital structure or its differentiation depending on the maturity of (short-term and long-term) debt, particularly for firms with shares listed on the Athex.

3. Model specification and data analysis

3.1 Firms' external financing and growth rate

In order to estimate the relationship between firms' external financing and their growth rate, the present study uses a static model of financial planning.[7]

The use of this model allows *the estimation of corporate maximum growth rate subject to constraints in external financing*.[8] However, firms may attain faster growth rates if they resort to external borrowing, as long as there is high demand for their products. According to this method, the estimation of corporate maximum growth rate is based on the following three assumptions:

First, a firm's assets to sales ratio remains unchanged, and thus its investments and the

7 For a more detailed presentation of such models see Higgins (1977) and Ross, Westerfield and Jordan (1995). These models are based on certain limitation assumptions, which nevertheless do not impede useful conclusions to be drawn, particularly in cases such as this one, where the period reviewed is relatively short.
8 In what follows, this will be simply referred to as: *maximum growth rate.*

financing of such investments increase proportionally to increases in its sales.

$$A/S = \varepsilon ,$$

where: A = assets
S = sales.

Second, the firm's earnings to sales ratio remains unchanged.

$$E/S = \varkappa ,$$

where: E = earnings.

Third, the depreciation rate of the firm's tangible assets is equal to the one appearing in its financial statements.

On the basis of the above assumptions, corporate external financing is calculated using the equation:

$$EF_{it} = g_{it}A_{it} - (1 + g_{it})\,\beta_{it}E_{it} , \qquad (1)$$

where: EF_{it} = the external financing of firm i over time t
g_{it} = the growth rate (%) of firm i over time t
A_{it} = the total assets of firm i over time t
β_{it} = the share of net earnings retained by firm i over time t for financing its investments
E_{it} = the net earnings of firm i over time t.

The left side of equation (1) represents the growth rate of the firm's investments when its sales increase by g_{it}. The right side represents the firm's available internal resources when the retained earnings percentage β_{it} is given.

On the basis of equation (1) and following the approach by Demirgüç-Kunt and Maksimovic (1998), we shall calculate for firm i three maximum growth rates:[9]

First, the *Internal growth rate* (Ig_{it}), i.e. the one financed exclusively through internal funds while dividend payments are effected.

Second, the *Short-term growth rate* (STg_{it}), i.e. the one financed through total retained earnings (without dividend payments), but also through short-term external financing to such an extent that the short-term financing to assets ratio remains unchanged.[10]

Third, the *Sustainable growth rate* (Sg_{it}), i.e. the one attained when the firm effects no dividend payments and uses short-term and long-term external financing to such an extent that its total debt to assets ratio remains unchanged.

The internal growth rate (Ig_{it}) is calculated using equation (1), considering that $EF_{it} = 0$ and solving the equation for g_{it}:

$$Ig_{it} = (E_{it} / A_{it}) / (1/\beta_{it} - E_{it}/A_{it})$$

$$= ROA_{it} / (1/\beta_{it} - ROA_{it}), \qquad (2)$$

9 The use of the static model of equation (1) for calculating and assessing a firm's maximum growth rates is subject to certain limitations. Specifically, this analysis presupposes that the firm does not resort to alternative forms of financing to an extent different from the one already observed, while in the case of excessive productive capacity the firm cannot grow at a rate faster than the one estimated through equation (1). Moreover, it does not take account of technological advances that may decrease needs for investment funds over time, and so overestimates the cost of growth or underestimates the maximum growth rate.

10 Here we also assume that the firm does not resort to any long-term debt or new equity issue to finance its needs.

where: ROA_{it} = return on assets (E_{it}/A_{it}).

Equation (2) shows that the relationship between internal growth rate (Ig_{it}) and return on assets (ROA_{it}) is positive and increasing.

The short-term growth rate (STg_{it}) is calculated using equation (1) if we solve the equation for g_{it}, considering that $\beta_{it} = 1$ and substituting total assets (A_{it}) with that share of the assets that is not financed by new short-term debt (STD). Therefore, equation (1) is rewritten as:

$$STg_{it} = \{E_{it}/(A_{it} - STD_{it})\}/\{(1 - E_{it})/(A_{it} - STD_{it})\}, \quad (3)$$

where: $A_{it} - STD_{it}$ = the firm's long-term capital.

The sustainable growth rate (Sg_{it}) is calculated using equation (1) if we solve the equation for g_{it}, considering that $\beta_{it} = 1$ and substituting total assets (A_{it}) with equity (EQ_{it}). Therefore, equation (1) is finally rewritten as:

$$Sg_{it} = ROE_{it}/(1 - ROE_{it}), \quad (4)$$

where: ROE_{it} = return on equity (E_{it}/EQ_{it}).

With a view to reaching some useful conclusions regarding the relationship between the growth and the financing of a firm, we need to compare the above three maximum growth rates with the firm's actual growth rate, as measured by the rate of change in its sales.[11]

The calculation is carried out as follows: initially, for every firm we calculate the average annual value of all its three maximum growth rates, as well as the average annual change in its sales in the 1998-2002 period. Then, we calculate the percentage of firms with maximum growth rates lower than their annual change in sales. Thus, we determine the share of firms that need external financing in order to attain a growth rate equal to the rate of change in their actual sales.

3.2 Determinants of capital structure

In this study we employ as a dependent variable the ratio of (total, short-term and long-term) debt to total assets.

On the basis of the empirical findings mentioned earlier —in Section 2.2— the independent variables relate to the firm's profitability, tangible assets and size. In addition, taking into account the borrowing mix of the firms examined, as well as stock exchange effects, short-term assets and investor estimates about a firm's medium-to-long-term prospects are also included as independent variables in the analysis.

Profitability: maximising a firm's profitability is one of the top priorities for its management. According to the pecking order theory, firms favour internal over external financing. Consequently, highly profitable firms are in a position to self-finance a larger part of their growth, and thus need lower external financing. As a result, the relationship between corporate profitability and indebtedness is expected to be negative. It is, however, possible that some highly profitable firms may also favour high debt in their effort to benefit from the tax deduction of their interest paying expenditures. In this study, corporate profitability is measured as the ratio of (pre-tax) earnings to total assets.

11 The average annual rate of change in sales (S_t) over a period of t-n years is calculated as: $(S_t / S_{t-n})^{1/t-n}$.

Tangible assets: the level of a firm's tangible assets (TANG) is a key factor that determines its indebtedness. Owing to the asymmetrical availability of information between credit institutions and the firm's management, the former demand some kind of collateral in order to extend loans to the latter. A firm's tangible assets are a reliable form of collateral, thanks to their liquidation value for the creditor. Furthermore, firms with a considerably high level of tangible assets are usually active in already developed industries, something that makes external financing easier. Thus, the relationship between tangible assets and external financing is expected to be positive. In our model, this variable is expressed as a percentage of total assets.

Firm size: the size of a firm (SIZE) is a major factor for securing external financing. Compared to smaller firms, larger ones usually have more diversified investments, and thus less volatile cash flows and lower bankruptcy risks. As a result, credit institutions grant them external financing of a longer maturity. Moreover, large-size firms have better access to capital markets and can borrow on more favourable terms than smaller ones. Thus, a positive relationship is expected between external financing (mainly long-term) and firm size (as proxied by the natural logarithm of sales).

Short-term assets: short-term assets (STA) represent a considerable part of corporate assets and require constant (chiefly short-term) financing. Therefore, we expect that the higher the level of a firm's short-term assets is, the higher its external (mainly short-term) financing will be.

Estimates about growth prospects: as regards investor estimates about a firm's medium-to-long-term growth prospects (GROWTH), it is expected that their effect will be negative on its long-term external debt and positive on its short-term one. This correlation becomes probable since any considerable improvement in investor estimates about a firm's prospects may be deemed excessive by banks, especially if such estimates are already high. In such a case, credit institutions will probably be reluctant to grant long-term loans to this firm and will favour short-term financing instead, thus limiting their credit risk. In this study, this variable is measured as the ratio of a firm's market to book value.

In line with the foregoing analysis, the effect of the determining variables of corporate capital structure will be estimated on the basis of the following linear model:

$$TD_{it} = c + \sum_{k=1}^{K} \beta_K X_{it}^k + \varepsilon_{it}$$

$$\varepsilon_{it} = v_i + u_{it}, \qquad (5)$$

where: TD_{it} = the total debt as a percentage of the assets (capital structure) of firm i over time t, with i = 1,...,N and t = 1,...,T

c, β_K = the model's coefficients

X_{it}^k = the k determining variables, with k = 1,...,K

ε_{it} = the statistical error

v_i = the firm-specific error

u_{it} = the residuals

Equation (5) is a "one-way error component model", where $v_i \sim IIN(0,\sigma_v^2)$ and independent of $u_{it} \sim IIN(0,\sigma_u^2)$.

Equation (5) will also be estimated alternatively, using the dependent variables LTD (long-term

Table 1
Descriptive statistics on the firms listed on the Athex

Years		TD	LTD	STD	ROA	TANG	SIZE	STA	GROWTH
1998	Average	0.482	0.056	0.426	0.099	0.284	15.6	0.580	1.8
	Standard deviation	0.211	0.095	0.211	0.102	0.201	1.8	0.225	2.0
1999	Average	0.418	0.053	0.365	0.099	0.233	15.8	0.589	7.2
	Standard deviation	0.213	0.097	0.206	0.099	0.190	1.7	0.217	6.3
2000	Average	0.372	0.056	0.316	0.074	0.216	15.9	0.528	2.2
	Standard deviation	0.211	0.109	0.197	0.154	0.179	1.8	0.215	2.3
2001	Average	0.394	0.077	0.317	0.056	0.217	16.2	0.494	1.5
	Standard deviation	0.213	0.128	0.197	0.087	0.177	1.8	0.227	1.3
2002	Average	0.416	0.089	0.327	0.038	0.227	16.2	0.481	1.1
	Standard deviation	0.206	0.129	0.187	0.086	0.184	1.8	0.221	1.0
1998 - 2002	Average	0.416	0.066	0.350	0.073	0.235	15.9	0.534	2.5
	Standard deviation	0.214	0.113	0.204	0.111	0.188	1.8	0.225	3.7

Note: TD: Total debt to total assets.
LTD: Long-term debt to total assets.
STD: Short-term debt to total assets.
ROA: (Pre-tax) earnings to total assets.
TANG: Tangible assets to total assets.
SIZE: Logarithm of sales (at current prices).
STA: Short-term assets to total assets.
GROWTH: Market estimate about the firm's prospects, as measured by the ratio of the firm's market to book value.

debt as a percentage of assets) and STD (short-term debt as a percentage of assets). The estimation of the coefficients of the independent variables is carried out following an econometric method of panel data analysis.

4. External financing of firms with shares listed on the Athex: statistical information and developments in the period 1998-2002

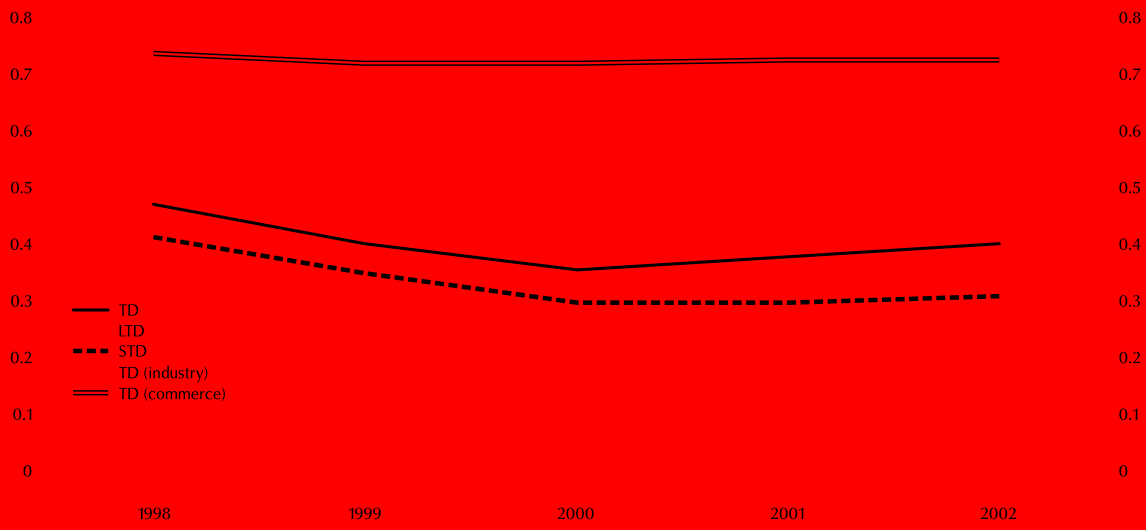
For the purposes of this study we used data drawn from the published financial statements of Greek non-financial firms[12] listed on the Athex – which numbered 265 in 2002, up from 142 in 1998. Descriptive statistics of the variables examined here for these firms as a whole can be found in Table 1 and Chart 1.

On the basis of these data we observe a high share of short-term financing (STD) in total financing (TD); a declining trend of total debt as a

12 Analysis in this study does not include firms of the banking, insurance, investment or leasing industries, or firms with the trading of their shares suspended in the Athex, on account of the particularity of both their financial statements and their borrowing practices.

Chart 1

Debt to total assets of the firms listed on the Athex and of all industrial and commercial firms



Note

TD:	Total debt to total assets of the firms examined.
LTD:	Long-term debt to total assets of the firms examined.
STD:	Short-term debt to total assets of the firms examined.
TD (industry):	Total debt to total assets of all industrial firms (ICAP data).
TD (commerce):	Total debt to total assets of all commercial firms (ICAP data).

Source: Authors' calculations (on firms listed on the Athex) and ICAP (on a broad sample of industrial and commercial firms with shares listed or not listed on the Athex.

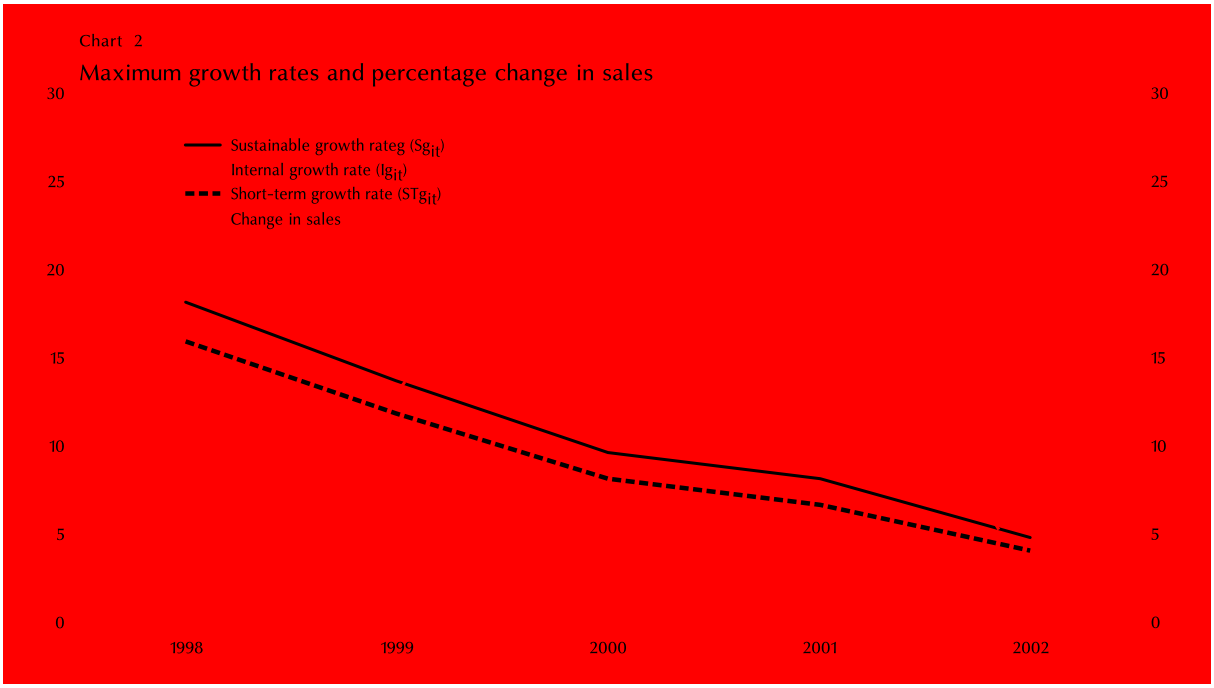
percentage of assets (capital structure and total debt indicator) in the period 1998-2000 and a reversal of that trend in the period 2001-2002; a gradual increase in the firms' size; and a downward trend in all other independent variables.

It should be noted that the decline of the total debt indicator in the period under review is attributed to short-term debt, since the long-term debt indicator increased. More specifically, total debt of all the firms under study fell from 48.2% of their total assets in 1998 to 37.2% in 2000, only to rise in the following two years and stand at 41.6% in 2002, i.e. at the average level of the five-year period under review. This evolution throughout the entire 1998-2002 period is mainly due to developments in short-term debt, the average share of which in total assets and in total debt was 35% and 86%, respectively.

Chart 1 shows that the evolution of the aforementioned debt indicators in the period 1998-2002 for the Athex-listed firms used in our sample was in line with developments in the respective indicators for a broader group of listed and non-listed on the Athex industrial and commercial firms monitored by ICAP,[13] although the short-term and long-term debt indicators for the Athex firms examined here stand at noticeably lower levels.

As for the other variables (see Table 1), profitability (ROA) recorded a constant decline and stood

13 According to ICAP data, total debt by all commercial (industrial) firms —including those not listed on the Athex— as a percentage (%) of their total assets remained close to the level of 50% (70%), recording a downward trend in the period 1998-2000 and an upward one in 2001-2002. Moreover, short-term debt as a percentage of total debt of industrial firms stood at 77% in 2002.



at 3.8% in 2002, compared with 9.9% in 1998, while the share of tangible assets (TANG) in total assets fell to 22.7% in 2002, from 28.4% in 1998. A constant increase was recorded in firm size (SIZE) in the period under review, while the level of short-term assets as a percentage of total assets (STA) fell by 10 percentage points in the period 1998-2002 and stood at 48.1% in 2002. Finally, the evolution of market estimates about the growth prospects of non-financial firms listed on the Athex was in line with general developments in the stock market in the period under study.

5. Estimation results

5.1 External financing and growth of non-financial firms listed on the Athex

Chart 2 presents the maximum growth rates (Ig_{it}, STg_{it}, and Sg_{it}), as well as the average annual rate of increase in sales, which —as mentioned earlier— expresses a firm's actual growth rate.[14] First of all, it can be seen that in the five years from 1998 to 2002 all three maximum growth rates have followed a declining trend, although not as pronounced as that of the rate of increase in sales (Chart 2), which indicates the firms' increased needs for short-term and/or long-term loan funds. It should be noted that this is observed both in the 1998-1999 period (during which share prices and corporate earnings increased considerably) and in the three years from 2000 to 2002 (during which the above figures have recorded an appreciable decline).

Taking into consideration that —as mentioned earlier— a relatively large number of firms launched

14 Owing to the effects of some extreme values of the data, the rates of maximum growth and of change in sales are calculated using the median value and not the average. Nevertheless, even if the average value is used, aside from the quantitative differences entailed, the study's basic conclusions remain the same.

Table 2
Percentage of firms with an average rate of increase in sales higher than their maximum growth rate in the 1998-2002 period

		Internal growth rate (Ig_{it})	Short-term growth rate (STg_{it})	Sustainable growth rate (Sg_{it})
Median		71.2	48.8	43.8
Quartiles:	1st	74.6	52.1	45.1
	2nd	78.9	54.9	47.9
	3rd	73.2	49.3	45.1
	4th	57.4	38.2	36.8

Note: The internal, short-term and sustainable growth rates are derived from equations 2, 3, and 4 respectively (see text). The quartiles are defined on the basis of the market value of the firms examined, where the 1st quartile includes the firms that have the highest market value while the 4th one comprises those with the lowest market value.

their shares in the Athex between 1998 and 2002, we analysed the three maximum growth rates for two separate samples of firms. The first sample includes firms with shares listed on the Athex prior to 1998; the second sample includes firms that listed their shares on the Athex in the period from 1998 to 2002.

Table 2 presents the fractions of firms with a rate of increase in sales higher than their three maximum growth rates.

In particular, it can be seen that 71% of the firms examined grew at a rate higher than the one they were in a position to finance using exclusively internal resources (retained earnings). Therefore, the remaining 29% of the firms was able to finance their growth using internal resources. In other words, three out of four firms had to resort to some kind of external financing in order to respond to their increased sales. In addition, we observe that the share of firms that used external financing (i.e. 71% of all firms) is broken down as follows: approximately 22% ($Ig_{it} - STg_{it}$) managed to finance their growth by resorting only to short-term financing, a further 5% ($STg_{it} - Sg_{it}$) had to resort to long-term financing, while the rest of the firms (44%) had to either alter the ratios of their short-term and long-term external financing to their assets, or resort to a different sort of external financing, such as e.g. new equity issues. It is also worth noting that the percentage of small-size firms resorting to external financing (57%) was considerably lower compared both with all the firms as a whole and with the large-size firms (75%). More specifically, it can be seen that the needs for further short-term external financing are not substantially different between large (22%) and small (19%) firms, while, in contrast, the needs for further long-term external financing are clearly greater for large firms (7%) compared with small ones (1%).

Analysing the respective percentages on the basis of the period of introduction of the firms' shares in the Athex (Chart 3) we observe that for the second sample the share of firms with an average annual increase in sales higher than the maximum growth rates was larger than that for the first sample, particularly as regards the internal maximum growth rate. Therefore, external financing needs appear to be greater for those firms that listed

Chart 3
Percentage of firms with an average rate of increase in sales higher than their maximum growth rates

Table 3
Percentage of firms per country with an average rate of increase in sales higher than their maximum growth rate

Countries	Internal growth rate (Ig_{it})	Short-term growth rate (STg_{it})	Sustainable growth rate (Sg_{it})
Greece	*71*	*48*	*43*
EU-10	54	37	24
France	59	38	22
Germany	60	48	30
Italy	44	31	20
Spain	58	41	32
Sweden	45	30	15
USA	55	42	31
Japan	68	52	38
Thailand	71	50	41
Malaysia	63	48	42
Brazil	38	37	37

Source: Calculations by the authors for Greece and by Demirgüç-Kunt and Maksimovic (1998) for the other countries. Periods the calculations refer to: 1998-2002 for Greece, 1980-1988 for Thailand and Malaysia and 1983-1991 for the other countries.

their shares on the Athex in the period between 1998 and 2002.

The findings of this study agree with the conclusions reached by Demirgüç-Kunt and Maksimovic (1998) (see Table 3). However, the share of firms with a rate of increase in sales higher than the one attainable using only internal resources is considerably larger in the case of Greece (71%) compared with the above authors' findings both for

Table 4

Estimation of the determinants of external financing

Dependent variables / Independent variables	All firms			Firms listed on the Athex prior to 1998			Firms listed on the Athex in the period from 1998 to 2002		
	Total debt to assets (TD)	Long-term debt to assets (LTD)	Short-term debt to assets (STD)	Total debt to assets (TD)	Long-term debt to assets (LTD)	Short-term debt to assets (STD)	Total debt to assets (TD)	Long-term debt to assets (LTD)	Short-term debt to assets (STD)
Intercept	0.022	0.049	-0.027	0.093	0.074	0.018	-0.716*	-0.200	-0.516**
(Pre-tax) earnings to assets (ROA)	-0.161***	-0.078***	-0.083	-0.145***	-0.039	-0.105***	-0.139	-0.179	0.039
Tangible assets to assets (TANG)	0.202*	-0.029	0.232*	0.185*	-0.054	0.240*	0.346*	0.058	0.288*
Size (SIZE)	0.018*	0.004	0.014**	0.014**	0.003	0.011**	0.0577*	0.017*	0.040*
Short-term assets to assets (STA)	0.068	-0.068	0.137*	0.052	-0.068**	0.121*	0.206*	-0.023	0.228*
Estimation of growth prospects (GROWTH)	-0.0008**	-0.0005*	-0.0002	-0.003*	-0.001**	-0.002**	-0.0004	-0.0003**	-0.00001
R^2	0.78	0.71	0.76	0.76	0.66	0.75	0.82	0.80	0.80
F	10.99*	7.81*	10.13*	12.15*	7.36*	11.45*	10.23*	8.57*	8.67*
Number of observations	1.105	1.105	1.105	707	707	707	398	398	398
Number of firms	265	265	265	142	142	142	123	123	123

Note: *, **, and *** imply statistical significance at the confidence levels of 1%, 5% and 10% respectively.
Typical errors of the estimations have been weighted based on the White statistic.
The R2 and F statistics account for fixed effects.

the ten countries of the European Union (EU-10) (54%) and for the total of the 30 countries examined in their study. Furthermore, the share of firms in need of short-term external financing is 22% for Greece compared with 17% for the EU-10, whereas the one in need of long-term external financing stands at 5% for Greece compared with 13% for the EU-10.

Therefore, as much at Greek as at European Union level, short-term external financing by credit institutions is more important than the long-term one for financing corporate growth, although in the case of Greece this relationship is more pronounced.

5.2 Determinants of the capital structure of non-financial firms listed on the Athex

Table 4 presents the results of the estimation of equation (5) following the fixed-effects (FE) method, so as to take account of factors that — although remaining unchanged over time— may be affecting the indicator of debt as a percentage of assets to a different extent for each firm.

In more detail, return on assets has a negative effect on capital structure and is statistically significant at the level of 10% only for the first sample of firms and particularly with respect to the equation of short-term debt. In contrast, for the second sample of firms profitability has no statistically significant effect for either short-term or long-term debt equations. This conclusion is consistent with the findings of the previous method,[15] according to which the share of firms that base their financing exclusively on internal resources (retained earnings) is considerably smaller in the second sample than in the first one. Consequently, the results of the estimates seem to be in support of the pecking order theory only with respect to the firms that had launched their shares in the Athex up to 1997, since it can be seen that the higher their degree of profitability, the lesser their external financing. This finding is in line with those of both the international literature (Kester, 1986; Titman and Wessels, 1988; Harris and Raviv, 1991; Rajan and Zingales, 1995; Berger *et al*., 1997; Bevan and Danbolt, 2002) and the domestic one (Vasiliou *et al.*, 2004).

As regards the effect of tangible assets on capital structure, we observe that it is positive and statistically significant only with respect to the equation of short-term debt, and consequently of total debt. Therefore, increased tangible assets as a percentage of assets appear to be playing a positive and important role in the banks' decision to satisfy the firms' demand for short-term loans. In contrast, this particular variable does not affect long-term debt. This finding, as regards short-term and total debt, is similar to those reported by Bradley *et al. (*1984), Rajan and Zingales (1995) and Vasiliou *et al. (*2004), while as regards long-term debt, it is in line with the results of the study by Titman and Wessels (1988).

The effect of size on corporate capital structure is seen to be positive and statistically significant, save for the case of long-term debt.[16] This finding leads us to accept the assumption that the larger the size of firms, the lesser the probability for them to go bankrupt or generally fail to service their debts to credit institutions. Thus, the larger the size of a

15 See the relevant analysis in Section 5.1.
16 It should be noted that several firms in the sample examined had low or no long-term debt.

firm, the higher its short-term and its long-term indebtedness. This finding is in line with those reported by Rajan and Zingales (1995), Berger *et al.* (1997), Bevan and Danbolt (2002), Demirgüç-Kunt and Maksimovic (1999), Van der Wijst and Thurik (1993), and Vasiliou *et al.* (2004), while it contrasts with those reported by Remmers *et al.* (1974) and Kester (1986), who found no statistically significant relationship between these two variables.

The effect of short-term assets was found to be particularly significant and positive mainly on the short-term financing of firms, which implies that a large part of the external financing of the firms examined is used to cover their working capital needs. More specifically, the effect of this variable on short-term debt is twice as large for the second sample of firms as for the first one, an estimate consistent with the findings of our analysis based on their maximum growth rates. In contrast, in the long-term debt equation the effect of this variable appears to be negative and statistically significant only for the first sample of firms.

Finally, the growth variable,[17] expressing the investors' estimates about the firms' growth prospects, appears to have a negative and statistically significant effect on long-term debt for both samples of firms, whereas with reference to short-term debt its effect is significant only for the first sample. Thus, this confirms the hypothesis that firms with high growth prospects limit their external financing. These estimates are in line with the most prominent relevant studies in the international literature. It should be noted that in the period under review all firms examined in this study, and particularly those that had launched their shares in the Athex prior to 1998, have raised a large amount of funds from the stock market, a fact that has allowed them to lower their short-term and especially their long-term debt.

6. Conclusions

This study analysed the relationship between the growth rate of 265 non-financial firms listed on the Athex and their external financing needs, on the basis of data drawn from their financial statements in the period 1998-2002. In addition, it developed a model through which it estimated the effect of the factors determining both the capital structure of the Athex firms and their long-term and short-term external financing.

Using a classic model of financial planning, three maximum growth rates with constraints in external financing for the firms were examined. A comparison of these rates with the rate of increase in sales revealed that less than one third of all firms can finance their growth using exclusively internal resources. This share decreases to one quarter for large-size firms, while it increases considerably, to approximately one half, for small-size firms. Moreover, it was observed that the share of firms in a position to self-finance their growth is approximately one fifth of the total of firms that launched their shares in the Athex in the 1998-2002 period, compared with roughly one third of those listed on the Athex prior to 1998, although the needs of the former for further external (mainly short-term) financing appear relatively higher.

Comparing the results of this study with those reported by Demirgüç-Kunt and Maksimovic

17 In relation to this, see also footnote 4.

(1998) in relation to a sample of 30 countries, it can be seen that the two studies agree on the higher importance of short-term external financing compared with the long-term one, although in the case of Greece the share of firms that financed their growth using exclusively internal resources is considerably smaller than the respective share for the European Union. Additionally, the share of Greek firms that used long-term external financing is considerably smaller than the respective EU one, although with respect to total external financing the Greek share is only slightly lower than the one observed at EU level.

Furthermore, this study points out that, for the firms as a whole, profitability has a negative effect on total and on long-term financing, but not on the short-term one. This is attributable to the fact that the effect of profitability is significant on the total and the short-term debt for the first sample of firms, but has no effect on any kind of financing for the second sample. In contrast, tangible assets and size have a statistically significant and positive effect on the total and the short-term financing, as much for the firms as a whole as for the separate samples examined. As regards short-term assets, they have a strong positive effect on short-term financing as much for the firms as a whole as for the separate samples examined. In contrast, their effect on long-term financing is negative for the first sample of firms. Finally, the effect of estimates about growth prospects is negative both on long-term financing (as much for the firms as a whole as for the two individual samples examined), and on the total and short-term financing for the first sample of firms, which entails a negative effect as well on the total financing for the firms as a whole.

Overall, the conclusions reached agree with the pecking order theory with respect to the financing practice of the first sample of Greek firms listed on the Athex. In contrast, it is estimated that this theory does not apply with respect to the second sample, a fact which is probably due to the considerably large amount of funds raised by the firms of this sample mainly through the introduction of their shares in the stock market in the period under review.

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Working Papers

(August 2005-January 2006)

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The comparative performance of Q-type and dynamic models of firm investment: empirical evidence from the UK

Working Paper No. 27
Eleni Angelopoulou

Firm investment can be formulated as a dynamic optimisation problem, in which a firm maximises its intertemporal flow of revenues by choosing an appropriate investment path over time. Starting from this optimisation problem, two alternative models of investment have prevailed in the empirical literature on firm investment: the Q models and the Euler equations. The first involves the identification of investment opportunities, captured by average Q, i.e. the ratio of the market value of capital to its replacement cost. The second methodology consists in the derivation and estimation of a dynamic model, which highlights the intertemporal character of investment.

Empirical work using Q models and Euler equations for investment often leads to the finding that the behaviour implied by the neoclassical investment story is rejected at least for sub-samples of firms with certain characteristics (e.g. size, dividend policy, etc.). This is usually attributed to financial market imperfections.

The Euler equation for investment is an alternative formulation of the solution to the neoclassical capital accumulation problem, but it is free from the empirical caveats of the Q model. First, it remains uncontaminated in the case of measurement error or endogeneity of Q. Second, it is straightforward to implement even in the case of imperfect competition in output markets. Therefore an estimation of both models using the same sample of firms for the same period of time would constitute a natural test for the validity of the neoclassical assumptions on which the two models are based. A bad empirical fit of both models could be an indication of the invalidity of the neoclassical story. If, however, one of the two approaches appears to be superior, then failure of the other approach should not necessarily be taken as an indication of the invalidity of the neoclassical assumptions, but could rather be attributed to the particularities of the specific methodology.

In this paper, panel data for 779 UK manufacturing firms are used to estimate both a Q model and an Euler equation. Keeping in mind the general criticism of the two approaches, the empirical results imply a relative superiority of the Q model, which delivers theory-consistent results. However, in the whole sample estimations, Q appears to have quite a low explanatory power for investment, and the estimated coefficients on Q are small, suggesting the presence of unreasonably high adjustment costs. Given the fact that both models have a common framework as a starting point, the overall conclusion is that there is not enough evidence against the general neoclassical framework; at the same time, however, both models (one more than the other) fail to give an adequate explanation for variability in investment.

Some further evidence on exchange rate volatility and exports

Working Paper No. 28
George Hondroyiannis, P.A.V.B. Swamy, George Tavlas and Michael Ulan

The relationship between exchange rate volatility and aggregate export volumes for 12 industrial economies is examined using a model that includes real export earnings of oil-producing economies as a determinant of industrial-country export volumes. A supposition underlying the model is that, given their levels of economic development, oil-exporters' income elasticities of demand for industrial-country exports might differ from those of industrial countries. Five estimation techniques, including a generalised method of moments (GMM) and random coefficient (RC) estimation, are employed on panel data covering the estimation period 1977:1-2003:4 using three measures of volatility.

The RC approach deals with four major specification problems that almost always arise in econometric estimation. The approach takes as its point of departure the premise that, although one can never be sure that a "true" model (in this case, a model of the determination of exports) exists, RC estimation, by correcting for factors that cause spurious relationships (e.g., the effects of omitted variables, unknown functional forms, and measurement errors), can find the most reasonable approximations to the "true" values of the identifiable coefficients of the "true", but unknown, model.

The empirical results suggest that there is no evidence of a negative and significant impact of volatility on real exports, regardless of which of the measures of volatility are used and the employed estimation technique. What accounts for the differences between our findings and those of recent studies using panel data which tend to find at least some evidence of a negative and significant impact? We suggest the following.

First, when more sophisticated estimation techniques —e.g., fixed effects and random effects— are employed, in those studies that do find negative and significant impacts of volatility, those impacts tend to be smaller than the impacts derived using less-sophisticated estimation techniques, even with use of the gravity model. Second, other studies did not examine the impact of real export earnings of oil-producing countries. The results show that such a variable is significant, with an elasticity of demand for industrial-country exports that is markedly different from the income elasticities of industrial countries. The omission of this variable from other panel-data studies indicates a source of specification bias. Third, the use of RC estimation helps account for other omitted variables without the use of an assortment of dummy variables as in the gravity model. In addition, RC estimation controls for endogeneity and also helps account for measurement errors and unknown functional forms. Finally, studies employing the gravity specification deal, by construction, with bilateral trade relations, whereas our study deals with aggregate trade. The tendency of studies of bilateral trade to yield significant negative mea-

sures of the effect of exchange rate volatility on those trade flows has long been recognised in the literature. The aggregate volume of international trade —not the trade between any two jurisdictions— is a measure of (or determines) the extent to which countries achieve the welfare gains that international trade can provide. Hence, it is the effect of exchange rate volatility on a country's aggregate trade (rather than on its trade with any particular subset of trading partners) that determines whether that volatility has an adverse effect on the welfare gains a country derives from trade. While the factors that can make exchange rate volatility decrease the volume of international exchanges do reduce trade between some pairs of trading partners slightly, in the aggregate the impacts of those factors are offset by those of the factors that tend to increase trade in the face of short-term exchange rate changes. Hence, overall, exchange rate volatility does not reduce the volume of, or the gains from, international trade.

Real exchange rate dynamics and output contraction under transition

Working Paper No. 29
Christos Papazoglou

Two major stylised facts that emerged during the early transformation experience of the transition economies of Central and Eastern Europe are the massive fall in output and the persistent appreciation of the real exchange rate. In this paper, we attempt to give a theoretical explanation, beyond that found in the existing literature, for the emergence of these two facts, which relies on the role of two basic characteristics. The first refers to the very structure of these economies in the early stages of transition and the second to the nature of the disturbances they encountered.

The structure of these economies involved the existence of an almost liberalised price system for domestic output, a large part of which, however, was still produced by state firms retaining most of the practices of the old regime. That is, while in many transition countries prices were liberalised almost immediately, measures for structural reform of the real sector proceeded at a relatively slow pace. As a result, although small-scale enterprises were privatised quite rapidly, more than 50% of GDP was still produced by state firms in most transition economies by the end of 1995.

Turning to the second characteristic, it refers to two virtually common shocks that these economies faced early in transition, which reflected the need for macroeconomic stabilisation and the dismantling of the state sector as structural change proceeded. The considerable increase in prices, primarily reflecting the liberalisation of prices, as well as the impact of monetary overhang, necessitated the adoption of a strong anti-inflation policy stance. The dismantling of the state sector and the increased reliance on the private sector constituted the essence of transition towards the establishment of a functioning market economy. In our analysis we consider the impact of a monetary contraction and of an increase in the demand for output produced by private firms, stemming from a corresponding decline in state sector output, to capture the effect of the two disturbances.

The analysis relies on a theoretical framework of a typical small open transition economy, which incorporates these two characteristics. It is shown that the existence of the state sector makes the market for privately-produced output rather "thin", increasing its responsiveness to excess demand. This, in conjunction with the nature of the two disturbances under consideration, has important implications for domestic output and the real exchange rate. More specifically, it causes a larger long-run output fall and appreciation of the real exchange rate than what would have otherwise been. Turning to the short run, it leads to an overshooting of both the output decline and the real exchange rate appreciation in the case of monetary contraction. In contrast, in the case of an increase in the demand for privately-produced output, the two variables undershoot their long-run levels, giving rise to a declining trend during their adjustment towards the long run. Thus, it appears that the slow progress of structural reform in several transition countries, in conjunction

with the nature of the disturbances they faced early in transition, may have constituted an additional reason for the emergence of the particular stylised facts. Furthermore, it enhances the policy recommendations that were given to these countries for faster structural reform to accompany the liberalisation measures already taken early in transition.

The European Union GDP forecast rationality under asymmetric preferences

Working Paper No. 30
George A. Christodoulakis and Emmanuel C. Mamatzakis

The Stability and Growth Pact plays a central role in European Economic and Monetary Union. Given the single monetary policy and the constraints imposed by the rules of the Pact, Member States are effectively left with little margin for manoeuvre over the business cycle. Automatic stabilisers together with limited fiscal discretion, with the latter being highly dependent on the projection of GDP growth, could be used to guide economic policy in the short run. For this reason, the European Commission forecasts, and in particular GDP growth forecasts, are bound to receive increased attention, even more so in the light of the discussions to reform the Pact by allowing a more flexible interpretation of budgetary aggregates over the cycle. To a large extent, Commission forecasts could bypass the hazards of bias from national forecasters and thereby they could effectively provide a rational benchmark upon which the assessment of the Stability and Growth Programmes, which in turn set the main national macroeconomic projections over the next three to four years, is based.

In this paper, we assess the structure of forecast loss preferences and the rationality of Commission's forecasts using Keereman's data set updated until 2004. We do not impose any specific preference structure since the symmetric loss function is included in the model as a special case. We adopt a newly established approach and estimate the parameter of the forecast error loss function which controls its shape, allowing for asymmetries in the classes of linear and quadratic loss functions. Further, we test the null hypothesis of rationality by applying a J-statistic under a variety of instruments and loss function shapes. Our results suggest that the Commission forecast error loss preferences tend to vary across Member States. In particular, for current year forecasts and an asymmetric quadratic loss function, our evidence suggests that the Commission preferences are pessimistic for half of the Member States and symmetric for the remaining ones. This picture drifts towards symmetry under a linear loss function. In the case of one-year ahead forecasts and a linear loss function, our estimates indicate symmetric preferences with the exception of pessimism for two small counties, whilst for a quadratic loss function this picture of symmetry reverses to significant optimistic preferences for four countries and the EU as a whole. The massive improvement in the preference structure of current year forecasts possibly reflects the fact that the latter constitute a revision of one-year ahead forecasts.

Optimistic growth forecasts imply lower projected levels for the nominal deficit and thus they allow some leeway against the required fiscal adjustment within the framework of the Stability and Growth Pact, especially for countries in an excessive deficit procedure. Thus, in its annual assessment of fiscal adjustment of EU countries, the Commission could be less critical of some countries over the uncertainties surrounding the magnitude of their projected nominal deficit than it should be. Additionally, optimistic growth forecasts allow countries to claim *ex post* that they

could not meet their fiscal target due to negative surprises to growth. Notice that under the new Pact it is legitimate for countries to repeat steps within the excessive deficit procedure in the event of unforeseen economic events that implied lower growth rates than projected due to events outside the control of the government. Forecasts could be improved by applying less optimism in the loss preference structure in the case of countries under the excessive deficit procedure. This would enhance the rationality of the forecasts, particularly in light of developments in the economic outlook in recent years, when the Commission forecasts failed to predict the sharp deceleration and subsequent stagnation of economic activity in some euro area countries.

Measuring the correlation of shocks between the EU-15 and the new member countries

Working Paper No. 31
Stephen G. Hall and George Hondroyiannis

This paper considers the question of the symmetry of inflation, exchange rate changes and GDP shocks between the EU-15 and the new member countries (Estonia, Latvia, Cyprus, Lithuania, Malta, Hungary, Poland, Slovak Republic, Slovenia, Czech Republic). It applies a relatively new technique, the orthogonal GARCH model, which allows us to calculate a complete time-varying correlation matrix for these countries.

A key aspect of this analysis is that conventional correlations measure something which is true on average over a particular historical period but which may not be true of the future. A more appropriate measure is a conditional correlation based on a good time series model of the series under examination. In effect a system GARCH model would allow us to properly examine the changing conditional correlation in the shocks affecting these countries. We calculate the conditional covariance matrix of shocks and to examine the pattern of developments in these correlations from the early 1990s to the early 2000s.

This latter measure of correlation seems to be more appropriate to estimate the relationship between the EU-15 and the new member countries since it takes into account potential changes in the relationship through time. By contrast, the simple correlation coefficient is not sufficient to describe the complete dependence structure between two variables. Thus, this coefficient has the major drawback that, as an average estimate during the whole estimation period, it is not capable of taking into account regime changes. Therefore, in the estimation of the relationship between the EU-15 and the new member countries, the simple correlation coefficient cannot distinguish between the early transition period and the later one, during which presumably the new member countries enter a period of greater integration; moreover, it cannot capture the potential effect of the structural reforms. Hence, it is possible that the simple correlation could be misleading since low correlation does not necessarily imply low interdependence through time.

The empirical results suggest that, by the end of our period (2002), most of the new member countries were still in a different economic position compared to the European Union countries. Therefore, based on this element of the optimal currency area criteria it would seem that, at least at 2002, the new member countries were not yet ready to take part in a currency union. However, in some cases in the last two years of the sample (2001 to 2002), the conditional correlation of real GDP growth has increased or shows a tendency to increase, reflecting the successful efforts of many new member countries towards market restructuring, financial liberalisation, macroeconomic stability and orientation of their trade towards EU countries.

Monetary policy and financial system supervision measures

(July 2005 – January 2006)

Monetary policy measures of the Eurosystem

7 July, 4 August, 1 September, 6 October and 3 November 2005

The Governing Council of the ECB decides that the minimum bid rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility will remain unchanged at 2.0%, 3.0% and 1.0% respectively.

1 December 2005

The Governing Council of the ECB decides, with effect from 6 December 2005:

1. To increase the minimum bid rate on the main refinancing operations by 0.25 percentage point to 2.25%.

2. To increase the interest rate on the marginal lending facility by 0.25 percentage point to 3.25%.

3. To increase the interest rate on the deposit facility by 0.25 percentage point to 1.25%.

16 December 2005

The Governing Council of the ECB decides to increase the allotment amount for each of the longer-term refinancing operations to be conducted in the year 2006 from €30 billion to €40 billion. This increased amount takes two aspects into consideration. First, the liquidity needs of the euro area banking system are expected to increase in the year 2006. Second, the Eurosystem has decided to increase slightly the share of the liquidity needs satisfied by the longer-term refinancing operations. The Eurosystem will, however, continue to provide the bulk of liquidity through its main refinancing operations.

12 January 2006

The Governing Council of the ECB decides that the minimum bid rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility will remain unchanged at 2.25%, 3.25% and 1.25% respectively.

Bank of Greece decisions on the establishment and operation of credit institutions and the supervision of the financial system

12 July 2005

— The range of services offered by money transfer intermediaries is expanded and the terms of money transfers by intermediaries and bureaux de change in collaboration with credit institutions are set.

— "International Express Remittance S.A." is authorised to operate as a money transfer intermediary.

— "Wordlink S.A." is authorised to operate as a money transfer intermediary.

19 July 2005

Bank of Greece Governor's Act 2563/19 July 2005 amends and codifies the provisions of Bank of Greece Governor's Act 1313/9 June 1988, as amended by all relevant decisions and circulars of the Bank of Greece issued since 1988, concerning the items assessed in the exercise of the supervisory power of the Bank. These arrangements, for which consultation was carried out with credit institutions, facilitate the fulfilment of their obligations and reinforce the effectiveness of Bank of Greece's supervision.

26 July 2005

The ceiling on the financing of natural persons by the Postal Savings Bank for the purchase of goods and the coverage of personal needs is increased from 15% to 40% of its own funds.

4 August 2005

EFG Eurobank Ergasias is authorised to acquire 76.34% of the share capital of "Nacionalna Stedionika Banka", based in Serbia-Montenegro.

11 October 2005

— Taking into consideration that any increase in the ratio of housing loans granted by banks to the relevant collateral and the maintenance of this ratio at high levels may affect significantly the size of potential loss, the relevant arrangements concerning the weights applied to the calculation of capital requirements for credit risk are amended.

— With a view to, on the one hand, harmonising, from a supervisory view point, the concept of adequately securing loans backed by real estate collateral and, on the other hand, incorporating into banks' risk management mechanisms the other risk parameters, especially the instalment-to-disposable income ratio, the provisions on the adequacy of credit institutions' provisioning for mortgage-backed loans are amended.

2 November 2005

The Germany-based "Deutsche Schiffsbank AG" is authorised to establish and operate a representative office in Greece.

5 December 2005

— The terms and conditions for authorising credit institutions based abroad to establish and operate representative offices in Greece are set.

— The Germany-based "Deutsche Bank AG" is authorised to establish and operate a representative office in Greece.

— The France-based bank "CALYON" is authorised to establish and operate a representative office in Greece.

15 December 2005

A branch of the Luxembourg-based "Société Generale Bank and Trust" commences its operation in Greece.

1 January 2006

The Paris-based bank "Société Generale" discontinues the operation of its branch in Greece.

2 January 2006

A branch of the Belgium-based "Fortis Bank SA/NV" commences its operation in Greece.

Decisions of the Bank of Greece

Re: Complementation of the provisions of Bank of Greece Governor's Acts 2536/2004 and 2541/2004 on the operation of money transfer intermediaries and bureaux de change respectively (Banking and Credit Committee Decision 202/1/12 July 2005)

The Banking and Credit Committee, having regard to:

a) Article 18 of Law 3148/2003 "Money transfer intermediaries" and Article 15 of Law 2515/1997 "Bureaux de change";

b) Bank of Greece Governor's Act 2536/4 February 2004 "Requirements for granting authorisation to, and rules for the supervision of, money transfer intermediaries by the Bank of Greece";

c) Bank of Greece Governor's Act 2541/27 February 2004, which amended and codified the provisions of Bank of Greece Governor's Act 2440/11 January 1999 "Establishment and operation of bureaux de change in Greece by sociétés anonymes other than credit institutions", as was in force;

d) requests by money transfer intermediaries seeking approval to purchase foreign exchange on behalf of the Bank of Greece, on the basis of Currency Committee decision 176/4/1977, as currently in force, and carry out activities supplementary to their own;

e) requests by money transfer intermediaries and bureaux de change seeking approval to provide intermediation services in co-operation with credit institutions;

f) Opinion 376/29 March 2005 of the Bank of Greece Legal Department;

g) the relevant recommendation by the Bank of Greece Department for the Supervision of Credit and Financial Institutions dated 8 July 2005;

has decided as follows:

A. The provisions of Bank of Greece Governor's Act 2536/4 February 2004 shall be complemented as follows:

1. Money transfer intermediaries shall be allowed to provide the following supplementary services:

   a) to purchase foreign exchange on behalf of the Bank of Greece, on the basis of Currency Committee decision 176/4/1977, as currently in force, in accordance with the approvals granted for limited amounts, on a case-by-case basis, by the Department for the Supervision of Credit and Financial Institutions;

   b) to cooperate with credit card issuers domiciled in Greece or abroad for supplying credit card holders with cash, up to the respective cash advance limit granted by the credit card issuer;

   c) to accept payment of corporate bills;

   d) to sell tickets for domestic and international means of public transport, concerts and other cultural events;

   e) to provide travel agency and travel insurance services, provided that any required authorisation has previously been granted by the competent authorities, and sell the products of the Hellenic Post S.A. and;

   f) to promote and sell mobile or fixed telephony companies' products and internet access providers' products.

2. In the event that money transfer intermediaries cooperate with credit institutions for money transfers:

   a) that are credited to deposit accounts of the principals or the beneficiaries, kept with the cooperating credit institution either directly or through deposit accounts of the above companies with the said credit institutions,

   b) that concern payment of bills/liabilities of the principals towards the said credit institutions, the above intermediaries must meet all the following conditions:

      i) they may not be affiliates of credit institutions, within the meaning of para. 5 of Article 42e and Article 96 of Law 2190/1920, as currently in force;

      ii) they may not undertake contractual commitments on behalf of credit institutions concerning the provision of services statutorily reserved for credit institutions or special purpose vehicles (e.g. credit companies);

      iii) they may not advertise or promote products of the said credit institutions the provision of which is statutorily reserved for credit institutions or special purpose vehicles.

B. The provisions of para. A.2 above shall also apply to bureaux de change, the provisions of Bank of Greece Governor's Act 2541/27 February 2004 being accordingly complemented.

C. The Bank of Greece Department for the Supervision of Credit and Financial Institutions is authorised to further specify the provisions of this decision.

D. The provisions hereof shall come into force upon its publication, except for the provisions of para. A.1, which shall come into force on 1 October 2005.

* * *

Re: Amendment to Bank of Greece Governor's Act 2524/23 July 2003 on the solvency ratio of credit institutions established in Greece (Bank of Greece Governor's Act 2564/ 11 October 2005)

The Governor of the Bank of Greece, having regard to:

a) the Statute of the Bank of Greece, in particular Article 55A thereof, as currently in force;

b) Article 1 of Law 1266/1982 "Authorities responsible for the conduct of monetary, credit and exchange rate policies, and other provisions" in conjunction with Article 12, para. 1 of Law 2548/97;

c) Article 18 of Law 2076/1992 ''Taking up and pursuit of business of credit institutions, and other relevant provisions'', as amended by Article 38, para. 3, of Law 2937/2001;

d) Bank of Greece Governor's Act 2524/23 July 2003, as currently in force, on the solvency ratio of credit institutions established in Greece, especially the provisions of subpara. 1(c)(1) of the sixth section thereof, according to which the Bank of Greece may specify the conditions under which a 50% weight applies to mortgage-backed loans of credit institutions;

e) the estimate that increases in the loan-to-collateral ratio and its maintenance at high levels, in conjunction with other risk factors, affect the level of potential loss,

has decided as follows:

1. The provisions of subpara. 1(c)(1) of the sixth section of Bank of Greece Governor's Act 2524/23 July 2003, as currently in force, shall be amended and a 50% weight shall apply to the part of the loan up to 75% of the market value of the real estate collateral. For the remaining part of the loan, a 100% weight shall apply.

2. a) The corresponding provisions of subpara. 1.a(i) of the tenth section of Bank of Greece Governor's Act 2524/23 July 2003, as currently in force, shall apply to the definition of "market value". The market value shall be calculated by an appraiser, independent from the bank's credit function.

b) The market value of the real estate collateral shall be reappraised at least every

three years, either following the above procedure or using statistical methods based on acceptable Dwelling Prices Indicators (e.g. the Dwelling Price Index for urban areas published by the Bank of Greece). If there are reasons to believe that the value of the property may decrease significantly in comparison with the general market prices, the property must be appraised by an independent appraiser.

c) In the event that a credit institution finds it very difficult to use the above procedure for reappraising the real estate collateral, it shall apply to the outstanding balance of the loan the weight for the total loan that resulted at its initial granting and shall notify the Bank of Greece accordingly.

3. The Bank of Greece reserves, in any event and notwithstanding the provisions of the above paragraphs, the right to request more frequent reappraisal of real estate collaterals, either using statistical methods or by an independent appraiser, taking into consideration market conditions.

4. The provisions hereof shall apply as from the submission of the 31 December 2005 data.

5. The Department for the Supervision of Credit and Financial Institutions is authorised to issue instructions and clarifications concerning the implementation of the present Act.

* * *

Re: Amendment to, and complementation of, Bank of Greece Governor's Act 2442/29 January 1999, as currently in force, concerning the adequacy of credit institutions' provisioning coverage of loans (Bank of Greece Governor's Act 2565/11 October 2005)

The Governor of the Bank of Greece, having regard to:

a) the Statute of the Bank of Greece, in particular Article 55A thereof, as currently in force;

b) Article 1 of Law 1266/1982 "Authorities responsible for the conduct of monetary, credit and exchange rate policies, and other provisions", in conjunction with Article 12, para. 1, of Law 2548/97;

c) Article 18 of Law 2076/1992 ''Taking up and pursuit of business of credit institutions, and other relevant provisions'', as amended by Article 38, para. 3, of Law 2937/2001;

d) Bank of Greece Governor's Act 2442/29 January 1999 "Adequacy of credit institutions' provisioning coverage of loans", as currently in force;

e) Bank of Greece Governor's Act 2524/23 July 2003 on the solvency ratio of credit institutions established in Greece, as amended by Bank of Greece Governor's Act 2564/2005;

f) the advisability of harmonising from a supervisory viewpoint the concept of adequately securing loans backed by real estate collaterals, as well as the need to incorporate the other risk parameters into the risk manage-

ment mechanisms of all banks, especially the instalment-to-disposable income ratio, in line with international practice;

g) the advisability of faster write-offs of doubtful loans;

has decided to amend and complement the provisions of Bank of Greece Governor's Act 2442/29 January 1999, as currently in force, as follows:

1. The relevant provisions of Bank of Greece Governor's Act 2442/29 January 1999, as currently in force (last amended by Bank of Greece Governor's Act 2557/26 January 2005), shall be amended as follows:

   a) The decrease in provisioning ratios for mortgage-backed loans shall apply to the part of the loan up to 75% of the market value of the real estate collateral (para. 3(a) of the Act, as currently in force).

      The corresponding provisions of subpara. 1.a (i) of the sixth section of Bank of Greece Governor's Act 2524/23 July 2003, as amended by Bank of Greece Governor's Act 2564/2005, shall apply to the definition of "market value" and the method of calculation and periodical reappraisal thereof.

   b) The decrease in provisioning ratios shall no longer apply to the outstanding balances of mortgage-backed loans overdue more than 12 months (subparas (d), (e) and (f) of para. 1 of Bank of Greece Governor's Act 2442/1999, as currently in force).

2. a) In the calculation of the provisions taken into account, under Bank of Greece Governor's Act 2442/29 January 1999, as currently in force, for the assessment of the capital adequacy of credit institutions, the Bank of Greece shall recognise, until 31 December 2007, part of the write-offs to be effected by credit institutions during 2005 and 2006 as follows:

      On the basis of capital adequacy data:

      i) as at 31 December 2005, 30% of the write-offs effected during 2005 shall be taken into account;

      ii) as at 31 December 2006, 30% of the write-offs effected during 2006 and 20% of the write-offs effected during 2005 shall be taken into account;

      iii) as at 31 December 2007, 20% of the write-offs effected during 2006 shall be taken into account.

      It is clarified that, when assessing capital adequacy in the intervening quarters of the above period (31 December 2005 to 31 December 2007), the Bank of Greece shall include in the provisions of Bank of Greece Governor's Act 2442/29 January 1999, as currently in force, the amount of write-offs determined on the basis of the data of 31 December of the immediately preceding year, in accordance with the above points.

   b) As from 1 January 2007, credit institutions shall increase, by forming a special reserve, their own funds by the amount of loans

more than three years overdue, under Bank of Greece Governor's Act 2442/29 January 1999, as currently in force, in the event that such loans have not been covered by special provisioning.

3. Any shortfalls in the provisions made by the credit institution to meet the provisioning requirements of Bank of Greece Governor's Act 2442/29 January 1999, as currently in force, shall be calculated as follows: 50% on core capital and 50% on supplementary capital, as defined in Bank of Greece Governor's Act 2053/1992, as currently in force.

4. If a credit institution writes off the part of a debtor's loan that is not backed by collateral, the provisions of para. 5(b) of Bank of Greece Governor's Act 2442/29 January 1999, as currently in force (restructured loans), shall apply to the outstanding balance of the loan.

5. The Bank of Greece Department for the Supervision of Credit and Financial Institutions is authorised:

   a) to issue instructions and clarifications on the implementation of the present Act;

   b) to issue instructions on the incorporation of the determinants of potential loss for each loan portfolio into the risk management mechanisms of all banks, especially the instalment-to-disposable income ratio;

   c) to determine, for each bank, the percentage of the provisions under Bank of Greece Governor's Act 2442/1999, as currently in force, that must be covered by accounting (general or special) provisions or special reserves.

The provisions hereof shall apply as from the submission of the 31 December 2005 data.

The provision of para. 5(a) of Bank of Greece Governor's Act 2513/15 January 2003 is repealed.

* * *

Re: Complementation of Bank of Greece Governor's Act 2526/8 December 2003 with terms and conditions for authorising credit institutions based abroad to establish and operate Representative Offices in Greece (Banking and Credit Committee Decision 211/1/5 December 2005)

The Banking and Credit Committee, having regard to:

a) the provisions of Law 1665/1951 "Banking operations and supervision", as currently in force;

b) the provisions of Law 2076/1992 "Taking up and pursuit of the business of credit institutions and other related provisions", as currently in force;

c) Bank of Greece Governor's Act 2526/8 December 2003 "Codification and complementation of Bank of Greece Governor's Act 1379/24 October 1988, as currently in force, concerning the terms and conditions for granting authorisation to a credit institution in Greece";

d) the advisability of complementing the above Act with terms and conditions for authorising

credit institutions based abroad to establish and operate Representative Offices in Greece,

has decided as follows:

I. The provisions of Bank of Greece Governor's Act 2526/8 December 2003 shall be complemented by adding a fourth section as follows:

"D. ESTABLISHMENT OF REPRESENTATIVE OFFICES BY CREDIT INSTITUTIONS

1. General provisions

a) For the purposes of the present Act, a Representative Office is a business unit of a credit institution that engages exclusively in one or all of the following activities:

i) collection and provision of financial and commercial information, on behalf of the head office, the branches and the customers of the represented credit institution;

ii) taking of initiatives for the development of cooperation between the represented credit institution and Greek firms in financial activities, as well as preparation of studies for the promotion of business activities by Greek and foreign firms;

iii) representation of the credit institution's interests in Greece;

iv) advertising and promotion of the products and services of credit institutions that provide services in Greece, under Article 13 of Law 2076/1992, in compliance with the provisions of para. 5 of that article and Bank of Greece Governor's Act 2501/2002, as currently in force.

b) A Representative Office may not undertake contractual commitments on behalf of any credit institution or make collections from, or payments to, customers of the credit institution in Greece in relation to any operation subject to supervision, including those referred to in subpara. (a) to (l) of Article 24 of Law 2076/1992. To carry out the above transactions that concern operations referred to in the aforementioned article, the terms and conditions for the establishment of branches of credit institutions must be complied with (Articles 11 and 12 of Law 2076/1992, as currently in force, and sections B and C of Bank of Greece Governor's Act 2526/2003).

2. Establishment of Representative Offices by credit institutions based in EEA countries

In order for a credit institution having its registered office in another EU country or a country that has ratified the Agreement on the European Economic Area (EEA) to establish and operate a Representative Office in Greece, the competent supervisory authority of the country where the credit institution is based shall notify in advance the Bank of Greece (Department for the Supervision of Credit and Financial Institutions). The credit institution concerned may proceed with the establishment and operation of the Representative Office as soon as it receives a written notice from the Bank of Greece, also communicated to the supervisory authority of the country where the credit

institution is based, or if two months have passed from such notification and no answer has been provided. The said supervisory authority shall provide the following information to the Bank of Greece:

a) name and postal address of the represented credit institution, along with a certificate by its supervisory authority to the effect that the said credit institution is subject to such authority's supervision and that no commissioner has been appointed, it has not been placed under compulsory administration or gone into liquidation and that the supervisory authority does not object to the establishment of the Representative Office;

b) the object of, and the name to be used by, the Representative Office in Greece;

c) the identification particulars and the information referred to in para. 2 (b), subparas (ii) and (iii), and para. 2 (f), subpara. (ii), of section A of Bank of Greece Governor's Act 2526/2003, concerning the person in charge of the Representative Office, who shall be a permanent resident of Greece;

d) the published financial statements of the credit institution for the immediately preceding fiscal year.

3. Establishment of Representative Offices by credit institutions based in non-EEA countries

In order for the Bank of Greece to authorise the establishment and operation in Greece of Representative Offices by credit institutions having their head office in a non-EEA country, an application shall be submitted to the Bank of Greece (Department for the Supervision of Credit and Financial Institutions) through the supervisory authority of the country where the credit institution concerned is based, which shall comprise the information stipulated in para. 2 (a)-(d) above.

4. Other generally applicable provisions

a) The Bank of Greece reserves the right to request additional information in order to provide the requested authorisation and to revoke such authorisation in the event that the submitted information proves to be untrue or misleading.

b) The commencement of operation of the Representative Office and its postal address shall be notified to the Bank of Greece (Department for the Supervision of Credit and Financial Institutions) within 15 days.

c) Any change in the above information (para. 2a-c) shall be notified in writing to the Bank of Greece one month in advance through the supervisory authority of the country where the credit institution is based.

d) The financial statements of the represented credit institution for the immediately preceding fiscal year shall also be submitted annually to the aforementioned Department of the Bank of Greece, as soon as possible after their publication."

II. It is clarified that all certificates submitted to the Bank of Greece for the purposes of Bank of

Greece Governor's Act 2526/2003, as complemented hereby, must be issued by duly authorised persons and be officially certified and translated into Greek or English.

Statistical section

Tables

Table I.1

Consumer price index

(Percentage changes with respect to the corresponding period of the previous year)

Period	General index	General index excluding food and fuel	General index excluding fresh fruit/vegetables and fuel	Goods	Services	Sub-indices		
						Food and non-alcoholic beverages	Fresh fruit and vegetables	Fuel
2002	3.6	3.6	3.6	3.2	4.3	5.3	13.8	–1.7
2003	3.5	3.1	3.2	3.1	4.2	5.0	10.7	3.9
2004	2.9	3.2	3.3	2.3	3.8	0.5	–11.9	7.5
2005	3.5	3.2	3.1	3.4	3.7	0.6	–8.1	18.0
2003 I	3.8	3.4	3.6	3.4	4.5	2.3	–5.4	15.9
II	3.7	3.0	3.1	3.4	4.1	8.3	27.6	–2.4
III	3.4	2.9	3.0	2.9	4.1	6.1	19.2	0.9
IV	3.2	3.3	3.2	2.5	4.3	3.3	4.6	1.9
2004 I	2.7	3.2	3.3	1.8	4.0	3.3	2.6	–5.7
II	2.9	3.2	3.3	2.3	3.9	–0.7	–16.3	11.6
III	2.8	3.4	3.4	2.1	3.9	–1.3	–22.8	9.6
IV	3.2	2.9	3.0	2.9	3.5	0.8	–11.3	15.5
2005 I	3.3	3.5	3.3	3.1	3.6	–0.6	–11.5	15.1
II	3.3	3.1	3.0	3.0	3.8	–0.3	–12.4	18.1
III	3.9	3.1	3.0	4.0	3.6	1.4	–4.1	21.6
IV	3.7	3.0	3.0	3.6	3.7	2.1	–2.2	17.1
2003 Jan.	3.1	3.6	3.7	2.1	4.7	–1.4	–19.6	13.7
Feb.	4.3	3.5	3.8	4.1	4.7	3.7	–0.5	18.6
March . .	4.1	3.1	3.4	4.1	4.1	4.7	5.5	15.4
Apr.	3.4	3.1	3.4	2.6	4.5	5.8	10.9	–1.9
May	3.8	2.8	2.9	3.9	3.7	10.3	40.2	–3.7
June . . .	3.8	3.0	3.0	3.6	4.2	8.9	34.6	–1.6
July	3.6	2.9	2.9	3.2	4.1	7.4	28.5	0.5
Aug.	3.3	2.9	3.0	2.8	4.0	5.6	17.0	1.6
Sept. . . .	3.3	3.1	3.2	2.8	4.2	5.2	12.6	0.7
Oct.	3.2	3.2	3.2	2.5	4.2	3.7	4.9	1.1
Nov.	3.3	3.2	3.1	2.9	4.1	3.3	5.6	6.3
Dec.	3.1	3.4	3.3	2.2	4.5	3.0	3.2	–1.4
2004 Jan.	2.9	3.2	3.2	2.3	3.9	3.5	4.9	–3.0
Feb.	2.5	3.1	3.1	1.5	4.0	3.7	4.7	–8.7
March . .	2.7	3.3	3.4	1.8	4.2	2.8	–1.3	–5.4
Apr.	2.9	3.2	3.2	2.3	3.9	0.4	–10.2	8.3
May	2.9	3.2	3.3	2.4	3.8	–1.0	–17.4	14.9
June . . .	2.8	3.3	3.5	2.1	3.9	–1.5	–20.9	11.7
July	2.9	3.8	3.8	2.2	4.0	–2.5	–28.2	10.0
Aug.	2.7	3.1	3.2	1.9	4.0	–0.7	–20.3	9.2
Sept. . . .	2.8	3.2	3.3	2.2	3.7	–0.7	–19.5	9.5
Oct.	3.2	3.0	3.0	3.1	3.5	0.3	–13.6	17.5
Nov.	3.1	2.9	3.1	2.8	3.6	0.2	–16.2	16.7
Dec.	3.1	2.8	2.9	2.8	3.5	1.9	–4.1	12.1
2005 Jan.	4.0	4.5	4.2	4.3	3.7	0.6	–8.9	10.3
Feb.	3.1	3.2	3.0	2.8	3.6	–0.9	–12.1	16.4
March . .	2.9	2.9	2.7	2.4	3.6	–1.3	–13.1	18.4
Apr.	3.4	3.1	3.0	3.1	3.8	–0.1	–11.0	19.7
May	3.2	3.3	3.2	2.7	4.0	–0.4	–12.3	14.9
June . . .	3.3	3.0	3.0	3.1	3.7	–0.5	–14.1	19.9
July	3.9	3.5	3.3	4.1	3.7	0.7	–7.9	20.0
Aug.	3.7	3.0	2.9	3.8	3.6	1.4	–3.7	20.8
Sept. . . .	3.9	2.9	2.8	4.2	3.6	2.0	–0.7	24.0
Oct.	3.8	3.1	3.0	3.8	3.9	2.7	2.1	17.1
Nov.	3.5	3.0	3.0	3.4	3.7	2.6	1.2	12.5
Dec.	3.6	2.9	2.9	3.7	3.5	1.0	–8.9	22.1

Source: Calculations based on National Statistical Service of Greece (NSSG) data (CPI 1999=100).

Table I.2

Industrial producer price index (PPI) for the domestic and the external market

(Percentage changes with respect to the corresponding period of the previous year)

Period	PPI in industry for the domestic market									PPI in industry for the external market	
				Consumer goods			Energy				
	General index	Inter-mediate goods	Capital goods	Total	Durables	Non-durables	Total	Fuel (oil refinery products)	General index excl. energy	General index	General index excl. energy
2002	2.3	1.3	1.5	3.2	1.8	3.3	2.1	–0.4	2.3	1.1	1.6
2003	2.3	2.3	1.6	2.7	1.0	2.8	1.8	–1.8	2.5	–0.3	–0.6
2004	3.5	3.2	4.5	6.0	2.0	6.2	4.0	4.3	4.7	5.0	1.8
2005	5.9	3.8	2.6	2.5	4.2	2.4	13.2	25.1	3.0	3.7	0.3
2004 I	1.3	1.6	2.3	6.5	1.6	6.7	–3.6	–15.9	4.3	2.3	2.5
II	4.4	3.3	4.8	6.9	1.3	7.2	6.0	11.0	5.3	7.4	3.4
III	4.4	3.6	5.3	6.1	1.3	6.4	6.5	10.8	5.0	6.0	1.8
IV	4.1	4.1	5.4	4.5	3.9	4.6	7.4	14.7	4.3	4.4	–0.4
2005 I	4.6	4.9	4.8	0.8	3.5	0.7	9.9	19.0	2.6	2.7	0.0
II	4.9	3.6	2.2	1.4	4.5	1.2	11.6	21.9	2.3	2.3	–0.6
III	6.3	3.3	1.1	2.2	4.9	2.1	15.8	29.8	2.6	4.5	0.4
IV	7.7	3.5	2.4	5.7	3.9	5.8	15.3	28.7	4.7	5.4	1.3
2003 Jan.	3.5	2.6	0.9	2.5	0.9	2.5	7.2	15.6	2.5	0.8	–2.1
Feb. . . .	4.3	2.9	0.6	2.9	1.1	3.0	9.6	22.6	2.8	1.5	–2.4
March . .	3.1	2.7	1.1	2.0	1.2	2.1	5.8	10.2	2.3	0.1	–1.8
Apr. . . .	1.6	2.4	1.1	2.0	0.9	2.1	–0.3	–9.5	2.2	–2.9	–1.9
May . . .	1.4	2.3	1.0	2.1	1.2	2.1	–1.0	–11.9	2.1	–3.1	–2.0
June . . .	2.0	2.0	2.2	2.3	1.3	2.4	1.3	–5.2	2.2	–1.4	–1.3
July	2.2	2.0	2.2	2.3	1.2	2.3	2.4	0.6	2.2	0.3	–0.3
Aug. . . .	2.0	2.1	2.2	2.9	1.2	3.0	0.2	–2.2	2.5	0.2	–0.6
Sept. . . .	1.7	2.0	2.2	3.2	1.4	3.3	–1.6	–12.1	2.6	–1.4	0.1
Oct. . . .	1.8	2.1	2.0	3.2	0.6	3.3	–1.1	–10.2	2.7	0.0	1.2
Nov. . . .	2.5	2.0	2.0	3.7	0.5	3.8	1.2	–3.1	2.9	1.9	1.9
Dec. . . .	2.0	2.3	2.0	3.5	0.5	3.7	–1.4	–11.6	2.9	0.8	2.1
2004 Jan.	1.2	1.1	1.4	6.4	1.8	6.7	–3.0	–14.4	4.0	2.4	2.3
Feb. . . .	0.7	1.7	2.1	6.4	1.5	6.7	–5.6	–20.6	4.3	1.3	2.5
March . .	1.8	2.0	3.4	6.5	1.4	6.8	–2.1	–12.4	4.5	3.0	2.6
Apr. . . .	3.9	3.1	4.8	7.0	1.5	7.3	4.3	6.4	5.2	6.8	3.4
May . . .	5.1	3.4	5.2	6.8	1.3	7.1	8.7	18.5	5.3	8.9	3.7
June . . .	4.2	3.3	4.5	7.0	1.3	7.3	5.1	8.3	5.4	6.7	3.2
June . . .	4.3	3.4	5.4	6.6	1.3	6.9	5.3	6.5	5.3	6.0	2.3
Aug. . . .	4.5	3.7	4.8	6.1	1.2	6.3	6.9	10.0	5.1	5.7	2.0
Sept. . . .	4.4	3.6	5.6	5.6	1.4	5.8	7.3	16.3	4.8	6.4	1.2
Oct. . . .	5.2	3.9	5.4	5.3	2.9	5.4	10.3	22.3	4.7	5.8	0.0
Nov. . . .	4.1	4.4	5.4	4.5	4.4	4.6	7.1	12.5	4.4	4.1	–0.5
Dec. . . .	3.0	4.1	5.4	3.8	4.4	3.8	4.6	9.0	3.9	3.1	–0.8
2005 Jan.	3.9	5.3	5.8	0.7	3.3	0.6	7.1	12.5	2.7	2.0	0.1
Feb. . . .	4.6	4.7	5.0	0.8	3.6	0.7	10.0	19.8	2.5	2.9	0.2
March . .	5.3	4.7	3.8	0.9	3.6	0.8	12.6	24.6	2.5	3.1	–0.3
Apr. . . .	5.1	3.8	2.7	1.0	4.3	0.9	12.8	24.9	2.2	2.4	–0.9
May . . .	3.7	3.4	2.3	1.3	4.6	1.1	7.8	13.2	2.1	1.2	–0.6
June . . .	5.7	3.5	1.7	1.8	4.7	1.7	14.3	28.0	2.4	3.3	–0.2
June . . .	5.6	3.5	0.5	1.8	4.7	1.7	13.9	26.9	2.4	3.9	0.2
Aug. . . .	6.0	3.2	1.4	2.1	4.7	2.0	14.9	28.3	2.5	4.4	0.5
Sept. . . .	7.3	3.2	1.3	2.8	5.1	2.7	18.6	34.0	2.8	5.2	0.6
Oct. . . .	7.0	2.9	2.1	4.9	4.4	4.9	14.5	24.3	4.0	4.4	0.8
Nov. . . .	7.0	3.5	2.5	5.1	3.6	5.2	13.6	26.1	4.3	5.3	1.3
Dec. . . .	9.1	4.1	2.5	7.1	3.6	7.2	17.9	36.9	5.7	6.5	1.9

Source: Calculations based on NSSG data.

Table I.3

Import price index in industry

(Percentage changes with respect to the corresponding period of the previous year)

Period	Import price index in industry								
				Consumer goods			Energy*		
	General index	Intermediate goods	Capital goods	Total	Durables	Non-durables	Total	Crude oil and gas pumping	General index excl. energy
2002	0.3	–0.7	0.1	0.8	–0.4	1.1	–11.4	. . .	0.4
2003	0.7	–1.1	0.8	0.9	–1.4	1.4	11.0	. . .	0.6
2004	3.1	4.4	–0.1	0.6	–1.1	1.0	40.7	. . .	0.8
2004 I	–0.1	2.1	–0.1	0.1	–1.2	0.5	7.5	. . .	0.1
II	2.3	4.1	–0.1	1.0	–0.7	1.4	38.9	. . .	1.0
III	4.3	4.9	0.0	0.7	–1.0	1.1	56.4	. . .	1.0
IV	5.8	6.2	–0.3	0.5	–1.4	1.0	64.5	. . .	1.2
2005 I	8.2	4.2	–0.8	1.0	–1.1	1.5	52.6	59.1	1.4
II	8.4	2.5	–0.5	1.2	–1.2	1.8	52.1	58.6	1.1
III	9.8	2.0	–0.2	1.6	–0.7	2.1	55.4	61.7	1.1
2003 Jan.	0.9	–1.7	0.8	1.3	–1.1	1.8	20.5	. . .	0.7
Feb. . . .	1.2	–1.8	1.8	1.1	–1.4	1.7	34.1	. . .	0.9
March . .	1.0	–1.6	1.7	0.5	–2.0	1.1	33.8	. . .	0.7
Apr. . . .	0.6	–1.6	1.2	0.6	–1.9	1.2	3.7	. . .	0.5
May . . .	0.4	–1.5	0.9	0.7	–1.7	1.2	1.9	. . .	0.4
June . . .	0.5	–1.4	0.8	0.7	–1.6	1.3	5.6	. . .	0.4
July	0.7	–1.2	0.9	1.0	–1.5	1.5	5.9	. . .	0.6
Aug. . . .	0.6	–0.9	0.3	1.1	–1.3	1.6	7.1	. . .	0.5
Sept. . . .	0.6	–0.5	0.3	1.0	–1.2	1.4	3.0	. . .	0.5
Oct. . . .	0.6	–0.4	0.4	0.9	–1.0	1.3	5.4	. . .	0.6
Nov. . . .	0.7	–0.2	0.4	0.8	–0.9	1.2	12.7	. . .	0.6
Dec. . . .	0.4	–0.5	0.1	0.8	–0.9	1.1	2.4	. . .	0.4
2004 Jan.	0.0	1.6	0.3	–0.1	–1.3	0.2	17.4	. . .	–0.1
Feb. . . .	–0.7	2.1	–0.1	0.0	–1.3	0.4	1.4	. . .	0.0
March . .	0.4	2.8	–0.4	0.5	–1.0	0.9	4.8	. . .	0.3
Apr. . . .	1.5	3.7	–0.2	1.0	–0.7	1.5	31.2	. . .	0.8
May . . .	2.9	4.3	0.1	1.1	–0.7	1.5	45.0	. . .	1.1
June . . .	2.5	4.4	0.0	0.9	–0.6	1.2	40.5	. . .	1.0
July	3.6	4.4	0.2	0.9	–0.8	1.3	50.0	. . .	1.0
Aug. . . .	4.2	4.9	0.0	0.6	–1.1	1.0	53.8	. . .	1.0
Sept. . . .	5.3	5.4	–0.2	0.6	–1.2	1.0	65.4	. . .	1.0
Oct. . . .	6.6	5.9	–0.1	0.7	–1.0	1.2	70.6	. . .	1.3
Nov. . . .	5.8	6.2	–0.4	0.5	–1.3	1.0	63.0	. . .	1.2
Dec. . . .	5.1	6.6	–0.5	0.3	–1.9	0.8	59.7	. . .	1.1
2005 Jan.	6.6	4.7	–0.6	0.4	–1.3	0.8	40.0	44.5	1.4
Feb. . . .	9.0	4.3	–1.0	1.4	–1.1	1.9	59.9	67.9	1.5
March . .	9.1	3.7	–0.6	1.2	–1.0	1.7	58.0	65.2	1.4
Apr. . . .	8.4	2.8	–0.6	1.0	–1.2	1.5	53.8	60.2	1.1
May . . .	6.5	2.3	–0.6	1.1	–1.2	1.6	39.1	43.7	0.9
June . . .	10.3	2.5	–0.3	1.5	–1.1	2.1	63.9	72.5	1.2
July	10.3	2.2	–0.4	1.6	–1.0	2.2	60.8	68.4	1.1
Aug. . . .	10.7	1.9	–0.3	1.7	–0.7	2.2	61.6	68.7	1.1
Sept. . . .	8.5	2.1	–0.1	1.6	–0.5	2.0	44.8	49.0	1.2
Oct. . . .	7.9	1.9	–0.1	1.6	–0.7	2.0	39.4	43.0	1.1
Nov. . . .	9.1	2.1	0.3	1.8	–0.2	2.3	46.6	51.9	1.4

* Data in the "energy" group for 2004 are not comparable with that of 2003 because of different composition since, before 2004, the index did not include the branches "carbon and lignite mining", "crude oil and gas pumping" and "electricity".

Source: Calculations based on NSSG data.

Table I.4

Industrial production index (2000=100)

(Percentage changes with respect to the corresponding period of the previous year)

Period	Industry								
					Main categories of goods				
	General index	Manufacturing	Mining-quarrying	Electricity-gas-water supply	Energy	Intermediate goods	Capital goods	Consumer durables	Consumer non-durables
2001	–1.8	–2.5	2.4	–0.1	–0.3	–0.5	–13.0	–14.4	0.7
2002	0.8	–0.1	9.7	1.8	2.3	1.6	–7.2	–15.4	2.3
2003	0.3	–0.4	–5.2	5.8	2.9	–0.4	0.8	–3.6	–1.4
2004	1.2	1.2	0.3	1.4	0.3	1.0	–0.5	1.8	2.7
2003 IV	0.1	–0.5	–0.1	3.0	–1.8	3.0	–2.7	–0.2	0.1
2004 I	2.1	1.3	5.9	4.2	2.2	0.2	8.2	–0.9	2.8
II	2.3	3.1	9.3	–3.5	–0.5	4.6	–0.3	19.7	2.4
III	0.9	1.5	–5.7	1.1	–0.5	–0.5	–1.3	2.6	4.4
IV	–0.8	–1.3	–7.5	3.9	0.0	–0.4	–6.7	–12.5	1.0
2005 I	–1.3	–1.0	–11.0	0.6	–2.3	–0.4	1.1	11.8	–2.7
II	–2.6	–3.3	–9.5	3.9	–0.9	–3.2	–9.7	6.9	–1.9
III	–0.5	–0.6	–0.2	0.1	1.4	–1.9	–6.7	5.4	0.4
2003 Jan.	1.6	4.6	–8.8	–5.6	–1.6	8.8	–9.4	9.3	0.1
Feb.	–3.6	–6.4	–16.0	15.1	6.9	–5.8	–21.1	–9.1	–5.9
March	–2.1	–3.9	–8.9	10.4	7.2	–6.8	–2.2	–11.6	–5.0
Apr.	–1.9	–3.3	–0.8	5.0	6.1	–7.4	–1.2	–20.6	–1.9
May	3.6	2.9	–8.0	12.1	10.3	–1.0	9.2	–6.3	1.7
June	1.0	1.2	–7.9	3.5	–6.5	2.4	19.3	2.8	1.4
July	1.9	2.4	–6.0	2.8	3.0	1.6	7.2	1.8	–0.3
Aug.	–2.4	–5.3	–4.1	8.8	6.1	–5.3	1.1	–0.8	–9.7
Sept.	4.9	4.3	–1.4	10.8	10.6	0.8	14.4	–1.8	2.3
Oct.	0.6	–0.5	0.3	6.3	–2.0	1.7	–3.5	2.4	3.2
Nov.	–2.6	–2.8	–11.5	2.0	–4.5	2.4	–6.8	–0.6	–5.0
Dec.	2.5	2.0	14.5	1.0	0.9	5.3	1.5	–2.3	2.3
2004 Jan.	–2.0	–5.0	–1.4	9.9	6.1	–9.8	10.8	–23.5	–4.2
Feb.	2.9	3.2	6.7	0.7	0.7	2.1	5.1	0.0	6.2
March	5.1	5.2	12.0	2.5	0.1	7.7	9.1	16.1	5.9
Apr.	3.8	3.9	13.1	–0.2	–2.2	6.3	2.6	17.2	6.8
May	2.7	4.4	4.7	–6.1	–2.7	6.8	5.6	20.2	1.5
June	0.6	0.9	10.3	–4.0	3.5	0.9	–7.2	21.2	–0.9
July	2.3	2.8	3.9	0.0	0.0	1.3	7.9	12.2	3.5
Aug.	0.5	2.2	–13.8	–0.4	–3.1	–3.6	–4.7	6.5	9.4
Sept.	–0.2	–0.4	–7.3	3.8	1.7	–0.1	–8.4	–8.1	1.1
Oct.	–3.7	–5.1	–2.2	1.9	–3.5	–3.4	–8.3	–13.8	–2.2
Nov.	2.1	2.3	–9.1	5.6	1.8	1.4	1.7	–14.7	4.8
Dec.	–0.5	–0.8	–11.7	4.3	1.4	1.2	–12.1	–8.9	0.8
2005 Jan.	0.6	0.5	–4.2	2.2	1.4	4.2	–6.8	25.9	–3.6
Feb.	1.2	3.0	–8.7	–2.6	–4.7	0.9	21.6	19.1	1.6
March	–5.3	–5.9	–18.6	2.2	–3.5	–5.3	–9.7	–1.6	–6.1
Apr.	–2.7	–3.1	–13.3	3.9	–7.7	–1.6	–3.8	23.2	–0.4
May	–2.7	–3.8	–7.4	5.0	3.4	–4.5	–7.7	2.2	–5.0
June	–2.4	–3.0	–7.9	2.8	1.6	–3.4	–16.5	–2.2	–0.2
July	–4.8	–6.2	–8.6	2.0	1.2	–7.6	–13.0	–8.2	–5.2
Aug.	3.9	4.5	4.9	1.5	1.9	5.7	–5.9	17.7	5.9
Sept.	0.5	1.1	4.2	–3.2	1.0	–1.1	–0.1	14.1	1.1
Oct.	3.8	5.6	1.6	–3.1	10.8	–0.5	8.9	18.9	–0.4
Nov.*	0.9	1.3	–1.8	0.1	3.6	1.1	3.3	28.4	–4.8

* Provisional data.
Source: NSSG.

Table I.5

Retail sales volume (retail trade turnover at constant prices)

(Percentage changes with respect to the corresponding period of the previous year)

Period	General index	Sub-indices			
		Food-beverages-tobacco	Clothing and footwear	Furniture and fixtures	Books-stationery-other items
2001	4.4	2.3	3.3	4.7	5.9
2002	4.8	4.5	3.6	4.6	5.3
2003	4.3	5.3	0.9	3.8	7.5
2004	4.5	7.1	1.4	3.9	4.7
2003 III	4.7	4.5	4.2	2.8	8.6
IV	3.5	7.7	–4.9	1.6	3.2
2004 I	4.9	6.2	0.6	5.7	6.5
II	5.0	7.8	–1.4	6.1	4.6
III	4.7	8.1	3.2	3.4	5.4
IV	3.5	6.5	3.1	0.9	2.8
2005 I	2.8	8.2	0.3	–4.8	–4.9
II	4.1	4.2	1.4	6.2	0.2
III	3.3	7.3	–0.6	0.4	–1.1
2003 Apr.	4.2	4.2	12.3	–8.0	21.2
May	1.8	–0.8	12.3	1.7	8.1
June	1.7	0.3	6.2	1.4	5.3
July	2.0	–0.2	5.5	2.0	3.1
Aug.	7.2	8.7	0.1	4.4	11.9
Sept.	5.2	5.3	6.5	2.2	11.2
Oct.	3.2	6.8	–5.7	5.6	1.3
Nov.	6.4	9.3	1.3	2.8	9.5
Dec.	1.4	7.2	–8.7	–2.4	0.4
2004 Jan.	3.0	7.2	–3.8	–3.4	2.2
Feb.	6.5	4.8	5.6	12.9	10.0
March	5.5	6.4	0.2	9.0	8.0
Apr.	5.8	8.6	–3.5	9.7	4.9
May	4.3	6.7	–5.3	7.9	4.5
June	5.0	8.2	5.7	1.3	4.5
July	6.4	13.6	2.5	2.2	3.6
Aug.	3.3	3.4	4.9	4.7	7.9
Sept.	4.3	7.6	2.5	3.4	5.2
Oct.	6.3	9.9	7.9	3.4	4.7
Nov.	2.7	6.1	0.4	–0.4	4.6
Dec.	2.0	4.2	1.8	–0.1	0.1
2005 Jan.	–2.8	6.7	–17.6	–14.8	–8.2
Feb.	4.7	7.4	14.8	–3.0	–4.3
March	6.7	10.7	3.8	4.2	–2.0
Apr.	3.6	2.9	0.5	5.0	–4.6
May	4.9	5.1	3.5	9.1	5.5
June	4.0	4.7	0.4	4.6	0.2
July	4.1	9.3	–2.8	0.5	–1.3
Aug.	3.8	9.3	–0.1	–1.9	–2.6
Sept.	2.1	3.6	1.3	2.4	0.3
Oct.	2.4	2.9	6.1	1.3	–1.5
Nov.	1.6	3.5	0.9	1.6	–2.0

Sources: NSSG. Revised index of retail sales volume (on the basis of a new sample of NSSG for the year 2000).

Table I.6

Gross value added at basic prices and gross domestic product at market prices

	Million euro	Annual percentage changes (at 1995 prices)					
	1995	2000	2001	2002	2003	2004	2005
Primary sector (agriculture)	7,277	–4.2	–4.1	–1.6	–4.0	0.6	. . .
Secondary sector	16,550	5.4	6.6	2.1	6.1	0.5	. . .
Mining and quarrying	476	23.2	2.2	8.4	–4.8	0.6	. . .
Manufacturing	9,572	4.6	3.3	2.5	3.5	–1.5	. . .
Electricity - gas - water supply	1,751	4.8	1.3	1.8	7.8	4.1	. . .
Construction	4,751	5.7	15.1	0.9	10.8	2.4	. . .
Tertiary sector	50,031	5.1	6.1	3.8	6.7	6.5	. . .
Trade	10,018	3.1	13.9	2.1	9.4	0.5	. . .
Hotels - restaurants	4,821	5.4	6.3	6.1	7.5	9.3	. . .
Transport - communications	4,978	16.2	1.3	5.9	6.3	20.8	. . .
Financial intermediaries	3,112	10.0	7.6	–8.9	21.9	9.4	. . .
Real estate management and other activities	12,577	3.5	4.4	2.1	2.8	0.2	. . .
Public administration - security	5,308	–2.8	1.0	8.4	–4.3	14.0	. . .
Education	3,298	1.6	–1.0	12.0	12.3	1.6	. . .
Health	3,855	3.0	2.5	5.8	5.4	0.4	. . .
Miscellaneous services	2,064	7.6	15.2	9.5	4.9	11.8	. . .
Gross value added at basic prices	73,858	4.4	5.4	3.1	5.8	4.7	. . .
Financial services indirectly measured (FISIM)	–2,175	13.8	18.8	–12.7	31.6	11.3	. . .
Gross value added (excluding FISIM)	71,683	4.1	4.9	3.8	4.8	4.4	. . .
Private consumption	58,405	2.0	3.1	3.3	4.5	4.4	3.2
Public consumption	12,250	14.8	–1.5	7.3	–2.1	3.9	2.5
Gross fixed capital formation	14,867	8.0	6.5	5.7	13.7	5.7	1.0
Housing	4,031	–4.3	4.8	8.8	7.3	–0.6	–1.5
Other construction	5,391	8.9	8.2	0.7	13.2	6.1	2.2
Equipment	4,680	14.1	4.9	6.9	18.3	8.0	1.1
Other	765	7.6	20.1	21.0	3.4	6.9	1.1
Change in stocks and statistical discrepancy (as a percentage of GDP)	251	0.7	0.2	0.3	0.1	0.1	0.0
Domestic final demand	85,774	5.7	2.7	4.4	5.5	4.7	2.4
Exports of goods and services	14,087	14.0	–1.0	–7.7	1.0	11.5	5.0
Exports of goods	8,344	8.7	–1.6	–7.1	4.2	–2.5	4.7
Exports of services	5,743	18.0	–0.7	–8.1	–1.3	21.8	5.2
Final demand	99,861	7.2	2.0	2.2	4.7	5.8	2.9
Imports of goods and services	19,934	15.1	–5.1	–2.7	5.1	9.3	0.7
Imports of goods	18,084	15.2	–6.3	3.7	7.1	9.0	0.2
Imports of services	1,849	14.3	–0.1	–28.0	–6.1	10.9	3.9
GDP at market prices	79,927	4.5	4.6	3.8	4.6	4.7	3.6

Sources: NSSG/National Accounts, September 2005: final data for 2000 and revised data for 2001-2004; Ministry of Economy and Finance (Updated Stability and Growth Programme 2005-2008) for 2005.

Table II.1
Balance of payments

(Million euro)

	January – November			November		
	2003	2004	2005*	2003	2004	2005*
I CURRENT ACCOUNT BALANCE (I.A+I.B+I.C+I.D)	***–9,088.3***	***–8,632.7***	***–11,551.4***	***–1,700.4***	***–1,939.2***	***–2,136.6***
I.A TRADE BALANCE *(I.A.1– I.A.2)*	***–20,382.8***	***–23,046.8***	***–24,705.6***	***–1,787.7***	***–2,312.3***	***–2,384.4***
Oil	–3,646.0	–4,171.4	–5,652.5	–333.8	–424.7	–564.4
Non-oil	–16,736.8	–18,875.4	–19,053.1	–1,453.9	–1,887.6	–1,820.0
Ships	64.3	389.3	–528.2	43.4	–84.3	–119.1
Trade balance excluding oil and ships	–16,801.1	–19,264.7	–18,524.9	–1,497.3	–1,803.3	–1,700.9
I.A.1 *Exports of goods*	*10,088.0*	*11,416.3*	*12,872.1*	*907.7*	*1,180.2*	*1,333.2*
Oil	1,186.2	1,401.1	2,095.1	72.9	167.5	241.1
Ships (receipts)	178.8	1,168.6	1,540.9	54.4	153.0	65.8
Other	8,723.0	8,846.6	9,236.1	780.4	859.7	1,026.3
I.A.2 *Imports of goods*	*30,470.8*	*34,463.1*	*37,577.6*	*2,695.5*	*3,492.6*	*3,717.7*
Oil	4,832.2	5,572.5	7,747.6	406.7	592.2	805.5
Ships (payments)	114.5	779.3	2,069.0	11.0	237.3	184.9
Other	25,524.1	28,111.3	27,761.0	2,277.8	2,663.1	2,727.3
I.B SERVICES BALANCE *(I.B.1–I.B.2)*	***11,099.8***	***14,811.5***	***15,095.4***	***354.3***	***593.7***	***514.8***
I.B.1 *Receipts*	*19,993.1*	*25,015.7*	*25,796.8*	*1,274.2*	*1,578.9*	*1,552.0*
Travel	9,273.8	10,119.0	10,806.5	250.0	248.0	253.0
Transport	8,599.6	12,094.7	12,591.8	832.8	1,150.2	1,069.8
Other	2,119.7	2,802.0	2,398.5	191.4	180.7	229.2
I.B.2 *Payments*	8,893.3	10,204.3	10,701.4	919.9	985.3	1,037.1
Travel	1,945.6	2,078.5	2,205.7	220.0	210.0	205.0
Transport	4,396.6	5,230.7	5,600.7	445.5	505.8	530.8
Other	2,551.1	2,895.1	2,895.1	254.4	269.4	301.3
I.C INCOME BALANCE *(I.C.1– I.C.2)*	***–3,343.1***	***–3,725.2***	***–4,771.4***	***–257.2***	***–258.4***	***–419.2***
I.C.1 *Receipts*	*2,049.6*	*2,258.2*	*2,614.8*	*159.7*	*208.7*	*256.1*
Wages, salaries	*309.9*	*253.3*	*257.6*	*24.1*	*20.6*	*25.0*
Interest, dividends, profits	*1,739.7*	*2,005.0*	*2,357.2*	*135.6*	*188.1*	*231.2*
I.C.2 *Payments*	*5,392.6*	*5,983.4*	*7,386.2*	*416.9*	*467.1*	*675.4*
Wages, salaries	*153.2*	*172.1*	*192.4*	*18.2*	*17.7*	*18.2*
Interest, dividends, profits	5,239.4	5,811.3	7,193.8	398.7	449.4	657.1
I.D. CURRENT TRANSFERS BALANCE *(1.D.1-1.D.2)*	***3,537.8***	***3,327.8***	***2,830.1***	***–9.8***	***37.8***	***152.3***
I.D.1 *Receipts*	*5,759.9*	*5,754.9*	*6,276.6*	*381.8*	*305.1*	*461.0*
General government (mainly EU transfers)	*3,679.9*	*3,662.3*	*4,238.8*	*215.1*	*137.3*	*266.8*
Other (emigrants' remittances, etc.)	*2,080.0*	*2,092.6*	*2,037.8*	*166.7*	*167.9*	*194.2*
I.D.2 *Payments*	*2,222.2*	*2,427.1*	*3,446.5*	*391.6*	*267.4*	*308.7*
General government (mainly to the EU)	*1,843.6*	*1,969.1*	*2,724.8*	*355.2*	*223.2*	*252.4*
Other	*378.5*	*458.0*	*721.6*	*36.4*	*44.1*	*56.3*
II CAPITAL TRANSFERS BALANCE (II.1–II.2)	**1,065.3**	**2,111.6**	**1,686.7**	**261.2**	**387.4**	**298.8**
II.1 *Receipts*	*1,202.7*	*2,327.1*	*1,938.0*	*274.9*	*405.3*	*321.1*
General government (EU transfers)	*1,049.8*	*2,188.0*	*1,767.3*	*260.3*	*387.8*	*307.5*
Other	*152.9*	*139.1*	*170.8*	*14.6*	*17.5*	*13.6*
II.2 *Payments*	*137.4*	*215.5*	*251.4*	*13.7*	*17.9*	*22.3*
General government (mainly to the EU)	*14.0*	*68.5*	*19.3*	*1.7*	*1.0*	*2.0*
Other	123.3	147.0	232.1	12.0	16.9	20.3
III CURRENT ACCOUNT AND CAPITAL TRANSFERS BALANCE (I+II)	**–8,022.9**	**–6,521.1**	**–9,864.8**	**–1,439.3**	**–1,551.8**	**–1,837.7**
IV FINANCIAL ACCOUNT BALANCE (IV.A+IV.B+IV.C+IV.D)	**7,730.9**	**6,217.9**	**10,338.9**	**1,137.5**	**1,004.4**	**1,610.3**
IV.A DIRECT INVESTMENT[1]	***–599.2***	***563.9***	***–1,001.7***	***–326.2***	***–49.5***	***–81.3***
By residents abroad	–466.5	–450.6	–708.8	–22.6	–19.9	–14.0
By non-residents in Greece	–132.6	1,014.5	–292.9	–303.6	–29.6	–67.4
IV.B PORTFOLIO INVESTMENT[1]	***10,640.5***	***10,484.1***	***7,535.0***	***–513.5***	***–1,205.9***	***355.5***
Assets	**–7,944.7**	**–10,223.3**	**–17,283.0**	**–1,723.1**	**–2,049.4**	**–1,254.9**
Liabilities	18,585.2	20,707.4	24,818.0	1,209.6	843.4	1,610.4
IV.C OTHER INVESTMENT[1]	***–6,180.4***	***–6,735.2***	***3,789.6***	***2,017.2***	***1,985.8***	***1,264.2***
Assets	–5,019.4	–11,356.3	–13,108.5	359.6	–1,046.6	–1,506.3
Liabilities	–1,161.0	4,621.1	16,898.1	1,657.6	3,032.5	2,770.5
(General government loans)	–2,459.5	–804.7	–117.0	–169.0	–67.7	–33.3
IV.D CHANGE IN RESERVE ASSETS[2]	***3,870.0***	***1,905.0***	***16.0***	***–40.0***	***274.0***	***72.0***
V ERRORS AND OMISSIONS	***292.0***	***303.3***	***–474.1***	***301.7***	***547.4***	***227.4***
RESERVE ASSETS[3]				***5,144.0***	***2,700.0***	***1,978.0***

1 (+) net inflow, (–) net outflow.
2 (+) decrease, (–) increase.
3 Reserve assets, as defined by the European Central Bank, include only monetary gold, the reserve position at the IMF, the special drawing rights and the Bank of Greece claims in foreign currency on residents of non-euro area countries. Conversely, reserve assets do not include claims in euro on residents of non-euro area countries, claims in foreign currency and in euro on residents of euro area countries, and the Bank of Greece participation in the capital and the reserve assets of the ECB.
* Provisional data.
Source: Bank of Greece.

Table II.2

Revised nominal exchange rate of the euro calculated on the basis of Greece's external trade*

(Period averages)

Period	Index (1990=100)	Percentage changes over:[1]	
		Previous period	Previous year
1995	94.7		
1996	96.3	1.7	1.7
1997	99.5	3.3	3.3
1998	96.8	–2.7	–2.7
1999	98.0	1.2	1.2
2000	91.6	–6.5	–6.5
2001	92.6	1.0	1.0
2002	94.3	1.9	1.9
2003	98.8	4.7	4.7
2004	100.3	1.5	1.5
2005	99.6	–0.7	–0.7
2003 I	97.6	2.0	5.2
II	99.2	1.7	5.9
III	98.7	–0.5	3.8
IV	99.7	1.0	4.2
2004 I	100.5	0.8	3.0
II	99.6	–0.8	0.5
III	100.0	0.4	1.3
IV	101.0	1.0	1.3
2005 I	100.6	–0.4	0.2
II	99.7	–0.9	0.1
III	99.2	–0.5	–0.8
IV	98.9	–0.3	–2.0
2004 Jan.	100.8	0.4	3.8
Feb.	100.7	–0.2	3.1
March	99.9	–0.7	1.9
Apr.	99.3	–0.6	1.1
May	99.8	0.6	0.2
June	99.8	–0.1	0.1
July	100.0	0.2	0.9
Aug.	99.9	0.0	1.4
Sept.	100.1	0.2	1.7
Oct.	100.6	0.5	1.4
Nov.	101.0	0.4	1.7
Dec.	101.3	0.4	0.9
2005 Jan.	100.8	–0.6	–0.1
Feb.	100.4	–0.4	–0.3
March	100.7	0.3	0.7
Apr.	100.4	–0.3	1.1
May	99.9	–0.5	0.0
June	98.9	–1.0	–0.9
July	99.1	0.2	–0.9
Aug.	99.3	0.2	–0.6
Sept.	99.2	–0.1	–0.9
Oct.	99.1	–0.1	–1.5
Nov.	98.8	–0.3	–2.1
Dec.	98.8	0.0	–2.5

* The nominal effective exchange rate (NEER) is the value of a representative basket of foreign currencies, each of which is weighed on the basis of its importance in the country's external trade. Up to end-2000, the NEER of the drachma was calculated weighing the individual bilateral exchange rates of the drachma against the other currencies, as these rates were formulated in the foreign exchange market. On 1 January 2001 Greece adopted the euro. The revised NEER index comprises Greece's 27 major trading partners (including the other 11 euro area countries) and the weights are calculated on the basis of imports and exports of manufacturing goods (categories 5-8) in the period 1999-2001, also taking account of the competition in third countries. This index should not be confused with the effective exchange rate of the euro, which is calculated on the basis of the external trade of the euro area as a whole.

1 A positive sign indicates an appreciation of the euro, while a negative sign a depreciation.

Source: Bank of Greece.

Table II.3

Bilateral exchange rates of the euro*

(Units of national currency per euro, period averages)

Period	US dollar	Percentage change over:		Japanese yen	Percentage change over:		Danish krone	Percentage change over:		Pound sterling	Percentage change over:	
		Previous period	Previous year		Previous period	Previous year		Previous period	Previous year		Previous period	Previous year
1997	1.1340	–10.7	–10.7	137.08	–0.7	–0.7	7.4836	1.7	1.7	0.69230	–14.9	–14.9
1998	1.1211	–1.1	–1.1	146.41	6.8	6.8	7.4993	0.2	0.2	0.67643	–2.3	–2.3
1999	1.0660	–4.9	–4.9	121.30	–17.2	–17.2	7.4400	–0.8	–0.8	0.65900	–2.6	–2.6
2000	0.9240	–13.3	–13.3	99.50	–18.0	–18.0	7.4500	0.1	0.1	0.60900	–7.6	–7.6
2001	0.8956	–3.1	–3.1	108.68	9.2	9.2	7.4521	0.03	0.03	0.62187	2.1	2.1
2002	0.9456	5.6	5.6	118.06	8.6	8.6	7.4305	–0.3	–0.3	0.62883	1.1	1.1
2003	1.1312	19.6	19.6	130.97	10.9	10.9	7.4307	0.002	0.002	0.69199	10.0	10.0
2004	1.2439	10.0	10.0	134.44	2.7	2.7	7.4399	0.1	0.1	0.67866	–1.9	–1.9
2005	1.2441	0.02	0.02	136.85	1.8	1.8	7.4518	0.2	0.2	0.68380	0.8	0.8
2003 I	1.0731	7.4	22.4	127.59	4.2	9.9	7.4305	0.03	–0.02	0.66961	5.3	8.9
II	1.1372	6.0	23.8	134.74	5.6	15.7	7.4250	–0.1	–0.1	0.70169	4.8	11.6
III	1.1248	–1.1	14.3	132.14	–1.9	12.7	7.4309	0.1	0.04	0.69888	–0.4	10.0
IV	1.1890	5.7	19.0	129.45	–2.0	5.7	7.4361	0.1	0.1	0.69753	–0.2	9.7
2004 I	1.2497	5.1	16.5	133.97	3.5	5.0	7.4495	0.2	0.3	0.67987	–2.5	1.5
II	1.2046	–3.6	5.9	132.20	–1.3	–1.9	7.4393	–0.1	0.2	0.66704	–1.9	–4.9
III	1.2220	1.4	8.6	134.38	1.6	1.7	7.4367	–0.03	0.1	0.67216	0.8	–3.8
IV	1.2977	6.2	9.1	137.11	2.0	5.9	7.4343	–0.03	–0.03	0.69507	3.4	–0.4
2005 I	1.3113	1.0	4.9	137.01	–0.1	2.3	7.4433	0.1	–0.1	0.69362	–0.2	2.0
II	1.2594	–4.0	4.5	135.42	–1.2	2.4	7.4463	0.04	0.1	0.67856	–2.2	1.7
III	1.2199	–3.1	–0.2	135.62	0.1	0.9	7.4588	0.2	0.3	0.68344	0.7	1.7
IV	1.1884	–2.6	–8.4	139.41	2.8	1.7	7.4586	0.004	0.3	0.67996	–0.5	–2.2
2004 Jan. . . .	1.2613	2.7	18.7	134.13	1.3	6.4	7.4481	0.1	0.2	0.69215	–1.4	5.3
Feb. . . .	1.2646	0.3	17.4	134.78	0.5	4.8	7.4511	0.04	0.3	0.67690	–2.2	1.1
March .	1.2262	–3.0	13.5	133.13	–1.2	3.9	7.4493	–0.02	0.3	0.67124	–0.8	–1.7
Apr. . . .	1.1985	–2.3	10.5	129.08	–3.0	–0.8	7.4436	–0.1	0.2	0.66533	–0.9	–3.4
May . . .	1.2007	0.2	3.7	134.48	4.2	–1.0	7.4405	–0.04	0.2	0.67157	0.9	–5.8
June . .	1.2138	1.1	4.1	132.86	–1.2	–3.8	7.4342	–0.1	0.1	0.66428	–1.1	–5.4
July . . .	1.2266	1.1	7.9	134.08	0.9	–0.7	7.4355	0.02	0.03	0.66576	0.2	–5.0
Aug. . .	1.2176	–0.7	9.3	134.54	0.3	1.6	7.4365	0.01	0.1	0.66942	0.5	–4.3
Sept. . .	1.2218	0.3	8.9	134.51	–0.02	4.3	7.4381	0.02	0.1	0.68130	1.8	–2.2
Oct. . .	1.2490	2.2	6.8	135.97	1.1	6.1	7.4379	–0.003	0.1	0.69144	1.5	–0.9
Nov. . .	1.2991	4.0	11.0	136.09	0.1	6.5	7.4313	–0.1	–0.1	0.69862	1.0	0.8
Dec. . .	1.3408	3.2	9.1	139.14	2.2	5.1	7.4338	0.03	–0.1	0.69500	–0.5	–1.0
2005 Jan. . . .	1.3119	–2.2	4.0	135.63	–2.5	1.1	7.4405	0.1	–0.1	0.69867	0.5	0.9
Feb. . . .	1.3014	–0.8	2.9	136.55	0.7	1.3	7.4427	0.03	–0.1	0.68968	–1.3	1.9
March .	1.3201	1.4	7.7	138.83	1.7	4.3	7.4466	0.1	–0.04	0.69233	0.4	3.1
Apr. . . .	1.2938	–2.0	7.9	138.84	0.002	7.6	7.4499	0.04	0.1	0.68293	–1.4	2.6
May . . .	1.2694	–1.9	5.7	135.37	–2.5	0.7	7.4443	–0.1	0.1	0.68399	0.2	1.8
June . .	1.2165	–4.2	0.2	132.22	–2.3	–0.5	7.4448	0.01	0.1	0.66895	–2.2	0.7
July . . .	1.2037	–1.0	–1.9	134.75	1.9	0.5	7.4584	0.2	0.3	0.68756	2.8	3.3
Aug. . .	1.2292	2.1	1.0	135.98	0.9	1.1	7.4596	0.02	0.3	0.68527	–0.3	2.4
Sept. . .	1.2256	–0.3	0.3	136.06	0.1	1.2	7.4584	–0.02	0.3	0.67760	–1.1	–0.5
Oct. . .	1.2015	–2.0	–3.8	138.05	1.5	1.5	7.4620	0.05	0.3	0.68137	0.6	–1.5
Nov. . .	1.1786	–1.9	–9.3	139.59	1.1	2.6	7.4596	0.0	0.4	0.67933	–0.3	–2.8
Dec. . .	1.1856	0.6	–11.6	140.58	0.7	1.0	7.4541	–0.1	0.3	0.67922	–0.02	–2.3

* Up to 31 December 1998, rates for the ECU; from 1 January 1999, rates for the euro. A positive sign indicates an appreciation of the euro, while a negative sign a depreciation. On 1 January 2001, Greece adopted the euro. Therefore, the evolution of the exchange rate of the drachma vis-à-vis the currencies of non-euro area countries is identical with the evolution of the exchange rate of the euro vis-à-vis these currencies. Up to end-2001, however, the differentiation observed in the annual rates of change is attributable to the deviation of the drachma from its central parity in 2000.

Sources: Bank of Greece and European Central Bank (ECB).

Table II.3 *(continued)*

Bilateral exchange rates of the euro*

(Units of national currency per euro, period averages)

Period	Swedish krona	Percentage change over:		Swiss franc	Percentage change over:		Norwegian krone	Percentage change over:		Australian dollar	Percentage change over:		Canadian dollar	Percentage change over:	
		Previous period	Previous year		Previous period	Previous year		Previous period	Previous year		Previous period	Previous year		Previous period	Previous year
1997	8.65	1.6	1.6	1.644	4.9	4.9	8.02	–2.2	–2.2	1.528	–5.9	–5.9	1.569	–9.4	–9.4
1998	8.92	3.1	3.1	1.622	–1.3	–1.3	8.47	5.6	5.6	1.787	17.0	17.0	1.665	6.1	6.1
1999	8.81	–1.2	–1.2	1.600	–1.4	–1.4	8.31	–1.8	–1.8	1.652	–7.6	–7.6	1.584	–4.9	–4.9
2000	8.45	–4.1	–4.1	1.558	–2.6	–2.6	8.11	–2.4	–2.4	1.589	–3.8	–3.8	1.371	–13.4	–13.4
2001	9.26	9.5	9.5	1.511	–3.0	–3.0	8.05	–0.8	–0.8	1.732	9.0	9.0	1.386	1.1	1.1
2002	9.16	–1.0	–1.0	1.467	–2.9	–2.9	7.51	–6.7	–6.7	1.738	0.3	0.3	1.484	7.0	7.0
2003	9.12	–0.4	–0.4	1.521	3.7	3.7	8.00	6.6	6.6	1.738	0.02	0.02	1.582	6.6	6.6
2004	9.12	0.001	0.001	1.544	1.5	1.5	8.37	4.6	4.6	1.690	–2.7	–2.7	1.617	2.2	2.2
2005	9.28	1.7	1.7	1.548	0.3	0.3	8.01	–4.3	–4.3	1.632	–3.5	–3.5	1.509	–6.7	–6.7
2003 I	9.18	1.0	0.3	1.466	–0.03	–0.5	7.57	3.4	–3.1	1.809	1.0	6.9	1.620	3.3	15.9
II	9.14	–0.4	–0.2	1.518	3.5	3.6	7.96	5.1	5.8	1.774	–1.9	6.5	1.589	–1.9	11.3
III	9.16	0.2	–0.7	1.545	1.8	5.6	8.25	3.6	11.5	1.709	–3.7	–4.9	1.553	–2.2	1.1
IV	9.01	–1.7	–0.9	1.554	0.6	5.9	8.22	–0.3	12.3	1.662	–2.7	–7.2	1.566	0.8	–0.2
2004 I	9.18	1.9	0.02	1.569	1.0	7.0	8.63	5.0	14.0	1.634	–1.7	–9.7	1.648	5.3	1.7
II	9.14	–0.4	0.03	1.537	–2.0	1.3	8.26	–4.3	3.9	1.691	3.5	–4.7	1.637	–0.7	3.1
III	9.16	0.1	–0.1	1.536	–0.1	–0.6	8.39	1.5	1.7	1.723	1.9	0.8	1.600	–2.3	3.0
IV	9.01	–1.6	0.04	1.533	–0.2	–1.3	8.20	–2.3	–0.3	1.713	–0.5	3.1	1.584	–1.0	1.1
2005 I	9.07	0.7	–1.2	1.549	1.0	–1.3	8.24	0.5	–4.5	1.688	–1.5	3.3	1.608	1.6	–2.4
II	9.21	1.5	0.7	1.544	–0.3	0.4	8.05	–2.3	–2.6	1.639	–2.9	–3.1	1.568	–2.5	–4.3
III	9.37	1.7	2.3	1.553	0.6	1.1	7.88	–2.1	–6.0	1.605	–2.0	–6.8	1.467	–6.4	–8.3
IV	9.47	1.1	5.1	1.547	–0.4	0.9	7.88	–0.04	–3.9	1.598	–0.4	–6.7	1.396	–4.9	–11.9
2004 Jan. . . .	9.14	1.3	–0.4	1.566	0.7	7.1	8.59	4.3	17.2	1.637	–1.5	–10.1	1.635	1.3	–0.1
Feb. . . .	9.18	0.4	0.3	1.573	0.5	7.2	8.78	2.1	16.3	1.626	–0.7	–10.2	1.682	2.9	3.2
March .	9.23	0.6	0.1	1.567	–0.4	6.6	8.54	–2.7	8.9	1.637	0.7	–8.8	1.631	–3.0	2.3
Apr. . . .	9.17	–0.8	0.1	1.555	–0.8	3.9	8.30	–2.8	5.9	1.614	–1.4	–9.4	1.607	–1.5	1.4
May . . .	9.13	–0.4	–0.3	1.540	–0.9	1.6	8.21	–1.1	4.3	1.703	5.5	–4.7	1.654	2.9	3.3
June . .	9.14	0.2	0.3	1.519	–1.4	–1.4	8.29	1.0	1.5	1.748	2.6	–0.4	1.649	–0.3	4.4
July . . .	9.20	0.6	0.1	1.527	0.5	–1.3	8.48	2.3	2.2	1.714	–2.0	–0.3	1.622	–1.6	3.4
Aug. . .	9.19	–0.1	–0.6	1.539	0.8	–0.1	8.33	–1.7	0.9	1.715	0.1	0.2	1.601	–1.3	2.8
Sept. . .	9.09	–1.0	0.3	1.543	0.3	–0.3	8.36	0.3	2.0	1.740	1.5	2.5	1.577	–1.5	2.9
Oct. . .	9.06	–0.3	0.6	1.543	–0.03	–0.4	8.23	–1.5	0.1	1.705	–2.0	1.1	1.560	–1.1	0.7
Nov. . .	9.00	–0.7	0.05	1.522	–1.4	–2.4	8.14	–1.1	–0.7	1.687	–1.1	3.2	1.554	–0.4	1.2
Dec. . .	8.98	–0.2	–0.5	1.536	1.0	–1.2	8.22	1.0	–0.3	1.746	3.5	5.0	1.633	5.1	1.3
2005 Jan. . . .	9.05	0.7	–1.0	1.547	0.7	–1.2	8.21	–0.1	–4.4	1.715	–1.8	4.7	1.606	–1.7	–1.8
Feb. . . .	9.09	0.4	–1.0	1.550	0.2	–1.5	8.32	1.3	–5.2	1.667	–2.8	2.5	1.613	0.4	–4.1
March .	9.09	0.04	–1.6	1.549	–0.05	–1.1	8.19	–1.6	–4.1	1.681	0.8	2.7	1.606	–0.4	–1.5
Apr. . . .	9.17	0.9	0.02	1.547	–0.1	–0.5	8.18	–0.1	–1.5	1.674	–0.4	3.7	1.599	–0.5	–0.5
May . . .	9.19	0.3	0.7	1.545	–0.2	0.3	8.08	–1.2	–1.5	1.657	–1.0	–2.7	1.594	–0.3	–3.6
June . .	9.26	0.8	1.3	1.539	–0.4	1.3	7.89	–2.3	–4.7	1.587	–4.2	–9.2	1.511	–5.2	–8.4
July . . .	9.43	1.8	2.5	1.558	1.2	2.0	7.92	0.3	–6.5	1.600	0.8	–6.6	1.473	–2.5	–9.2
Aug. . .	9.34	–0.9	1.7	1.553	–0.3	0.9	7.92	–0.05	–5.0	1.614	0.9	–5.8	1.482	0.6	–7.4
Sept. . .	9.33	–0.1	2.7	1.550	–0.2	0.4	7.81	–1.4	–6.6	1.601	–0.8	–8.0	1.445	–2.5	–8.3
Oct. . .	9.42	0.9	4.0	1.549	–0.04	0.4	7.83	0.3	–4.9	1.594	–0.4	–6.5	1.415	–2.1	–9.3
Nov. . .	9.56	1.5	6.3	1.545	–0.3	1.5	7.83	–0.1	–3.8	1.603	0.6	–5.0	1.394	–1.4	–10.3
Dec. . .	9.43	–1.4	5.0	1.548	0.2	0.7	7.97	1.8	–3.0	1.598	–0.3	–8.5	1.378	–1.2	–15.6

* Up to 31 December 1998, rates for the ECU; from 1 January 1999, rates for the euro. A positive sign indicates an appreciation of the euro, while a negative sign a depreciation. On 1 January 2001, Greece adopted the euro. Therefore, the evolution of the exchange rate of the drachma vis-à-vis the currencies of non-euro area countries is identical with the evolution of the exchange rate of the euro vis-à-vis these currencies. Up to end-2001, however, the differentiation observed in the annual rates of change is attributable to the deviation of the drachma from its central parity in 2000.

Sources: Bank of Greece and European Central Bank (ECB).

Table III.1

Monetary aggregates of the euro area[1,2]

(Outstanding balances in billion euro, not seasonally adjusted)

End of period	Currency in circulation (1)	Overnight deposits (2)	**M1** (3)=(1)+(2)	Deposits with an agreed maturity of up to 2 years (4)	Deposits redeemable at notice of up to 3 months (5)	**M2** (6)=(3)+(4)+ +(5)	Repurchase agreements (repos) (7)	Money market fund units (8)	Money market paper and debt securities with an initial maturity of up to 2 years (9)	**M3**[3] (10)=(6)+(7)+ +(8)+(9)
2001	239.7	2,039.2	2,279.0	1,088.8	1,316.6	4,684.4	218.5	398.0	145.9	5,446.8
2002	341.2	2,158.3	2,499.4	1,075.7	1,406.3	4,981.4	226.9	470.5	127.6	5,806.4
2003	397.9	2,329.2	2,727.1	1,039.2	1,529.6	5,295.8	208.7	581.5	92.7	6,178.7
2004	468.4	2,480.5	2,948.9	1,040.5	1,642.9	5,632.2	228.8	604.9	102.3	6,568.2
2005	532.9	2,935.2	3,468.1	1,123.2	1,548.2	6,139.4	221.2	614.3	130.9	7,105.8
2003 Jan.	312.1	2,128.7	2,440.8	1,077.2	1,405.5	4,923.8	233.0	534.9	109.2	5,800.5
Feb.	319.3	2,131.9	2,451.2	1,079.6	1,420.7	4,950.8	233.3	547.2	109.0	5,841.1
March . .	327.2	2,170.3	2,497.5	1,072.9	1,435.8	5,003.6	224.0	550.8	99.4	5,880.3
Apr.	336.3	2,190.9	2,527.2	1,082.1	1,443.1	5,052.4	230.5	565.5	122.6	5,970.9
May	343.8	2,217.7	2,561.5	1,097.4	1,450.5	5,109.4	231.7	571.5	103.7	6,016.3
June	351.0	2,254.4	2,605.4	1,060.6	1,464.0	5,130.1	215.0	570.5	99.9	6,015.5
July	361.5	2,223.3	2,584.8	1,064.1	1,475.3	5,124.3	219.9	585.0	94.1	6,023.3
Aug.	362.7	2,210.5	2,573.2	1,070.1	1,482.7	5,126.0	217.1	587.3	92.5	6,022.8
Sept.	364.8	2,250.7	2,615.6	1,038.6	1,482.8	5,136.9	211.5	576.9	87.6	6,013.0
Oct.	371.2	2,249.1	2,620.4	1,049.6	1,487.9	5,157.9	224.7	582.3	104.1	6,069.0
Nov.	379.1	2,288.6	2,667.8	1,043.5	1,494.8	5,206.0	224.7	585.2	103.6	6,119.7
Dec.	397.9	2,329.2	2,727.1	1,039.2	1,529.6	5,295.8	208.7	581.5	92.7	6,178.7
2004 Jan.	389.1	2,313.8	2,702.9	1,021.7	1.547.2	5,271.7	213.4	591.7	95.6	6,172.4
Feb.	393.5	2,309.8	2,703.3	1,016.4	1,553.8	5,273.5	227.7	599.2	97.0	6,197.5
March . .	399.6	2,345.9	2,745.5	1,005.6	1,559.1	5,310.2	218.6	602.6	94.5	6,225.9
Apr.	409.4	2,361.3	2,770.7	1,006.3	1,567.5	5,344.5	224.8	611.0	99.5	6,279.8
May	416.6	2,372.0	2,788.7	1,015.4	1,573.4	5,377.4	221.2	609.0	96.2	6,303.8
June	423.0	2,410.4	2,833.4	989.0	1,585.6	5,408.0	216.9	609.2	100.1	6,334.2
July	436.2	2,398.6	2,834.8	1,000.4	1,593.3	5,428.5	223.0	613.0	97.8	6,362.3
Aug.	433.4	2,362.3	2,795.7	1,003.5	1,598.9	5,398.0	224.3	624.1	99.3	6,345.6
Sept.	438.0	2,419.1	2,857.1	993.1	1,600.9	5,451.1	215.9	609.5	100.1	6,376.7
Oct.	444.4	2,421.6	2,866.0	1,019.4	1,605.0	5,490.4	229.7	617.1	99.0	6,436.1
Nov.	448.7	2,465.0	2,913.7	1,003.7	1,611.5	5,528.9	223.9	613.4	103.6	6,469.7
Dec.	468.4	2,480.5	2,948.9	1,040.5	1,642.9	5,632.2	228.8	604.9	102.3	6,568.2
2005 Jan.	459.9	2,506.1	2,966.0	1,015.4	1,655.9	5,637.3	228.7	616.4	99.2	6,581.7
Feb.	463.6	2,506.6	2,970.1	1,013.0	1,660.3	5,643.4	227.0	615.4	114.1	6,599.9
March . .	471.8	2,525.8	2,997.6	1,017.7	1,665.2	5,680.4	227.0	614.5	106.1	6,628.0
Apr.	481.1	2,550.0	3,031.1	1,034.8	1,672.5	5,738.4	226.3	627.8	121.0	6,713.4
May	485.8	2,578.3	3,064.1	1,035.7	1,678.7	5,778.4	239.2	634.8	113.5	6,766.0
June	496.6	2,808.0	3,304.5	1,027.4	1,520.2	5,852.1	238.9	621.3	118.5	6,830.9
July	506.4	2,814.7	3,321.1	1,042.1	1,525.7	5,888.9	238.6	635.1	119.2	6,881.8
Aug.	500.9	2,767.7	3,268.7	1,053.7	1,530.0	5,852.4	249.2	639.7	120.7	6,862.0
Sept.	507.1	2,815.4	3,322.5	1,077.7	1,532.0	5,932.3	234.4	631.5	120.0	6,918.2
Oct.	510.5	2,838.8	3,349.3	1,087.8	1,532.2	5,969.4	241.4	629.0	121.5	6,961.3
Nov.	514.5	2,864.0	3,378.5	1,085.6	1,531.3	5,995.4	239.3	629.7	130.0	6,994.4
Dec.* . . .	532.9	2,935.2	3,468.1	1,123.2	1,548.2	6,139.4	221.2	614.3	130.9	7,105.8

1 Monetary aggregates comprise monetary liabilities of MFIs and central government (Postal Savings Bank, Ministry of Finance) vis-à-vis non-MFI euro area residents excluding central government.
2 Euro area-11 up to end-2000. Euro area-12 from 1 January 2001 onwards.
3 M3 and its components exclude non-euro area residents' holdings of money market fund units, money market paper and debt securities with an initial maturity of up to 2 years.
* Provisional data.
Source: ECB.

Table III.2

Greek contribution to the main monetary aggregates of the euro area[1]

(Outstanding balances in billion euro, not seasonally adjusted)

End of period	Overnight deposits (1)	Sight deposits and current accounts (1.1)	Savings deposits (1.2)	Deposits with an agreed maturity of up to 2 years (2)	Deposits redeemable at notice of up to 3 months[2] (3)	Repurchase agreements (repos) (4)	Money market fund units (5)	Debt securities of up to 2 years (6)	Total[3] (M3 excluding currency in circulation) (7)=(1)+(2)++(3)+(4)++(5)+(6)
2001	70.8	16.1	54.7	29.4	2.4	24.2	9.7	0.1	136.7
2002	71.7	15.2	56.5	28.9	2.3	20.0	10.7	0.2	133.8
2003	79.5	17.6	61.9	32.3	2.0	10.8	15.7	0.5	140.8
2004	91.7	20.7	71.0	33.4	1.9	9.5	15.2	0.5	152.3
2005	99.2	24.8	74.4	50.6	4.4	2.7	4.9	0.4	162.3
2003 Jan.	70.3	14.2	56.1	28.9	2.2	20.2	12.0	0.2	133.7
Feb. . . .	71.8	14.4	57.4	27.1	2.2	19.2	12.9	0.2	133.5
March . .	72.5	14.9	57.6	27.3	2.2	16.8	14.1	0.2	133.2
Apr. . . .	72.7	14.6	58.1	28.7	2.2	16.3	14.4	0.3	134.7
May . . .	71.9	14.5	57.4	28.8	2.0	15.7	14.7	0.3	133.4
June . . .	74.9	16.7	58.2	29.7	2.1	13.5	15.7	0.4	136.3
July	72.9	15.8	57.1	32.0	2.1	13.0	15.8	0.4	136.3
Aug. . . .	74.0	16.1	57.9	33.0	2.2	12.2	15.7	0.4	137.5
Sept. . . .	74.9	17.1	57.8	32.7	2.1	12.0	15.6	0.4	137.7
Oct. . . .	74.0	16.2	57.8	33.3	2.1	11.8	15.6	0.5	137.3
Nov. . . .	74.1	15.4	58.7	32.9	2.1	11.6	15.5	0.5	136.7
Dec. . . .	79.5	17.6	61.9	32.3	2.0	10.8	15.7	0.5	140.8
2004 Jan.	79.5	17.2	61.6	32.5	2.1	10.6	15.2	0.5	139.7
Feb. . . .	79.6	17.3	62.3	32.1	2.1	10.5	15.2	0.5	139.9
March . .	82.1	17.8	64.3	31.8	2.1	9.5	15.8	0.4	141.6
Apr. . . .	81.4	17.8	63.6	33.5	2.2	9.1	15.9	0.4	142.5
May . . .	82.5	17.0	65.5	32.2	2.1	8.9	15.6	0.4	141.8
June . . .	84.9	18.3	66.6	32.4	2.1	9.4	15.8	0.4	145.0
July	85.5	18.3	67.2	33.0	2.1	9.3	15.9	0.4	146.2
Aug. . . .	84.9	17.7	67.2	33.2	2.1	9.6	15.8	0.4	146.1
Sept. . . .	86.0	18.7	67.3	33.4	2.1	10.5	15.3	0.5	147.8
Oct. . . .	86.4	18.9	67.5	33.6	2.0	10.4	15.4	0.5	148.2
Nov. . . .	87.5	19.6	67.9	33.8	2.0	10.1	15.3	0.5	149.1
Dec. . . .	91.7	20.7	71.0	33.4	1.9	9.5	15.2	0.5	152.3
2005 Jan.	90.4	19.8	70.6	37.8	2.0	5.6	14.9	0.5	151.2
Feb. . . .	91.9	20.8	71.1	39.4	2.0	4.4	14.6	0.5	152.8
March . .	90.9	20.4	70.6	41.0	2.0	4.2	14.2	0.4	152.6
Apr. . . .	91.1	20.2	70.9	42.3	2.6	3.8	13.0	0.5	153.4
May . . .	91.5	20.2	71.2	42.6	2.8	4.1	12.5	0.5	153.9
June . . .	96.8	23.9	72.9	42.2	3.1	3.7	10.9	0.4	157.2
July	93.8	21.8	72.0	43.9	3.3	3.3	10.7	0.4	155.4
Aug. . . .	93.5	21.2	72.3	45.0	3.6	3.3	10.1	0.3	155.8
Sept. . . .	94.8	22.5	72.3	45.5	3.9	3.3	7.3	0.4	155.2
Oct. . . .	95.5	23.2	72.3	48.4	4.1	2.6	6.2	0.4	157.2
Nov. . . .	94.9	23.1	71.8	49.7	4.5	2.7	5.5	0.4	157.7
Dec. . . .	99.2	24.8	74.4	50.6	4.4	2.7	4.9	0.4	162.3

1 The Greek contribution begins upon Greece's entry into the euro area (1 January 2001). For statistical reasons, however, the data on monetary aggregates were extended to cover previous years as well.

2 Including savings deposits in currencies other than the euro.

3 The Greek M3 (and likewise any euro area national M3) can no longer be accurately calculated, since part of the quantity of euro banknotes and coins that have been put into circulation in a euro area country is held by residents of other euro area countries and/or by non-residents. Due to these technical problems, the compilation of the Greek M0, M1, M2 and M3 was interrupted in January 2003.

Source: Bank of Greece.

Table III.3

Greece: deposits of domestic firms and households with OMFIs,[1] by currency and type

(Outstanding balances in million euro, not seasonally adjusted)

End of period	Total deposits	By currency		By type		
		Deposits in euro[2]	Deposits in other currencies	Sight deposits	Savings deposits	Time deposits[3]
2001	101,809,5	79,566.0	22,243.5	13,385.2	58,323.1	30,101.1
2002	104,761.1	87,732.3	17,028.8	13,367.3	60,406.1	30,987.7
2003	115,750.1	98,119.3	17,630.8	15,395.8	65,141.1	35,213.2
2004	128,424.6	110,206.7	18,217.9	18,274.2	73,954.2	36,196.1
2005	155,698.1	134,637.7	21,060.4	22,180.2	79,800.8	53,717.1
2003 Jan.	102,687.7	85,423.3	17,264.4	11,703.0	59,707.7	31,277.0
Feb.	102,455.9	85,527.5	16,928.4	12,419.8	60,981.4	29,054.7
March	103,684.4	86,637.5	17,046.9	12,996.7	61,203.6	29,484.0
Apr.	105,407.4	87,642.8	17,764.6	12,664.5	61,690.6	31,052.2
May	104,593.8	86,997.3	17,596.5	12,586.4	60,809.6	31,197.8
June	108,637.5	90,199.0	18,438.5	14,702.7	61,700.5	32,234.3
July	108,694.9	89,934.1	18,760.8	13,670.6	60,471.2	34,553.1
Aug.	110,793.2	91,498.3	19,294.9	14,035.9	61,242.3	35,515.0
Sept.	111,384.5	92,881.7	18,502.8	14,958.4	61,151.5	35,274.5
Oct.	111,068.9	92,207.8	18,861.1	14,024.4	61,020.5	36,024.0
Nov.	110,668.9	92,383.7	18,285.2	13,157.4	61,846.9	35,664.6
Dec.	115,750.1	98,119.3	17,630.8	15,395.8	65,141.1	35,213.2
2004 Jan.	114,996.0	96,977.6	18,018.4	14,874.7	64,645.4	35,476.0
Feb.	115,491.9	97,036.0	18.455,9	15,089.7	66,332.2	34,070.0
March	117,571.4	98,647.3	18,924.1	15,479.0	67,322.0	34,770.4
Apr.	118,835.4	99,526.4	19,309.0	15,687.6	66,697.8	36,450.0
May	118,645.4	99,905.7	18,739.7	14,995.6	68,548.9	35,100.9
June	120,997.2	102,774.4	18,222.8	16,078.1	69,641.4	35,277.7
July	122,396.3	103,778.5	18,617.8	16,368.9	70,186.6	35,840.9
Aug.	122,065.6	103,347.9	18,717.7	15,579.5	70,397.0	36,089.1
Sept.	123,471.3	104,687.8	18,783.6	16,727.8	70,396.8	36,346.7
Oct.	123,971.8	105,394.3	18,577.5	16,840.4	70,593.6	36,537.8
Nov.	124,875.8	106,408.6	18,467.2	17,304.0	70,903.5	36,668.3
Dec.	128,424.6	110,206.7	18,217.9	18,274.2	73,954.2	36,196.1
2005 Jan.	131,749.7	114,232.0	17,517.7	17,586,6	73.515.5	40.647.6
Feb.	134.088.9	116.771.1	17.317.8	17,866.2	74,096.0	42,126.7
March	134,801.8	116,303.2	18,498.7	17,521.9	73,527.1	43,752.9
Apr.	136,854.8	118,087.9	18,766.9	17,333.7	74,453.1	45,068.0
May	137,472.3	118,223.8	19,248.5	17,189.9	75,046.6	45,235.8
June	142,951.8	123,548.2	19,403.6	20,868.4	77,036.6	45,046.9
July	142,253.9	122,248.8	20,005.1	19,144.9	76,318.4	46,790.5
Aug.	143,123.5	122,629.8	20,493.7	18,436.6	76,764.9	47,922.0
Sept.	145,473.2	124,504.3	20,968.9	19,789.0	77,143.1	48,541.1
Oct.	149,303.2	128,222.6	21,080.6	20,542.2	77,351.8	51,409.2
Nov.	150,251.5	128,846.7	21,404.8	20,228.8	77,297.6	52,725.1
Dec.	155,698.1	134,637.7	21,060.4	22,180.2	79,800.8	53,717.1

1 Other Monetary Financial Institutions (OMFIs) comprise credit institutions (other than the Bank of Greece) and money market funds.

2 Including (until 31 December 2001) deposits in drachmas and the other euro legacy currencies.

3 Including blocked deposits.

Source: Bank of Greece.

Table III.4

Domestic MFI loans to domestic enterprises and households, by branch of economic activity

(Balances in million euro)

End of period	Total	In euro	In foreign currency	Branches of economic activity						
				Agricul-ture	Industry[1]	Trade	Housing	Tourism	Consumer credit	Other
2001	74,027.4	66,722.6	7,304.8	3,724.2	12,614.9	15,524.3	15,652.2	2,171.3	7,852.0	16,488.5
2002	86,510.5	80,099.7	6,410.8	3,224.7	14,364.0	15,670.8	21,224.7	2,903.2	9,755.4	19,367.7
2003	101,178.1	95,649.4	5,528.7	3,082.7	15,865.1	16,514.4	26,534.2	3,488.2	12,409.6	23,283.9
2004	117,201.7	111,951.1	5,250.6	3,248.0	15,675.6	18,821.6	33,126.8	4,040.0	17,053.8	25,235.9
2005	136,981.1	130,273.5	6,707.6	2,954.0	15,753.8	19,958.4	43,199.4	4,189.8	20,850.0	30,075.7
2003 Jan.	88,241.8	81,751.6	6,490.2	2,964.2	14,529.2	16,321.5	21,599.4	2,978.4	9,884.9	19,964.2
Feb.	88,787.7	82,332.2	6,455.5	2,980.5	14,485.6	16,310.3	22,062.6	3,049.0	10,023.3	19,876.4
March . .	89,363.0	83,075.2	6,287.8	2,994.0	14,422.3	16,053.5	22,366.8	3,095.5	10,247.3	20,183.6
Apr.	90,770.3	84,710.6	6,059.7	3,043.0	14,565.0	16,113.4	22,747.1	3,149.2	10,344.7	20,807.9
May . . .	92,497.1	86,811.4	5,685.7	3,027.6	14,866.7	16,488.6	23,183.1	3,085.8	10,432.6	21,412.7
June . . .	94,344.1	88,447.4	5,896.7	3,062.3	15,165.2	16,139.3	23,705.7	3,201.0	10,600.9	22,469.7
July	96,253.7	90,203.0	6,050.7	3,062.9	15,674.1	16,307.5	24,267.2	3,207.5	10,871.8	22,862.7
Aug. . . .	97,350.8	91,177.5	6,173.3	3,102.1	15,681.4	16,700.8	24,573.2	3,255.1	11,075.2	22,963.0
Sept. . . .	97,747.2	91,865.5	5,881.7	3,103.0	15,544.4	16,612.9	25,043.9	3,278.1	11,301.1	22,863.8
Oct	98,403.4	92,480.6	5,922.8	3,117.3	15,481.2	16,393.0	25,559.5	3,321.0	11,670.4	22,861.0
Nov. . . .	99,829.3	94,044.9	5,784.4	3,093.6	15,780.9	16,633.3	25,808.6	3,392.4	12,063.2	23,057.3
Dec. . . .	101,178.1	95,649.4	5,528.7	3,082.7	15,865.1	16,514.4	26,534.2	3,488.2	12,409.6	23,283.9
2004 Jan.	102,748.9	96,982.9	5,766.0	3,055.4	16,005.1	16,822.7	26,902.8	3,536.8	12,690.8	23,735.3
Feb.	103,899.7	98,214.0	5,685.7	3,042.0	15,948.2	17,060.8	27,334.5	3,587.7	13,041.9	23,884.6
March . .	105,263.2	99,372.4	5,890.8	3,095.5	15,831.8	17,012.4	27,894.2	3,661.6	13,442.3	24,325.4
Apr.	106,447.1	100,530.0	5,917.1	3,150.5	15,734.1	17,134.7	28,465.8	3,703.2	13,798.6	24,460.2
May . . .	108,835.0	103,158.1	5,676.9	3,242.6	15,950.4	17,773.5	29,080.6	3,766.9	14,169.3	24,851.7
June . . .	109,806.8	104,096.1	5,710.7	3,324.8	15,831.1	17,952.6	29,035.7	3,801.5	14,585.6	25,275.5
July	111,624.2	105,976.3	5,647.9	3,348.0	15,997.2	18,214.6	29,822.1	3,862.7	14,985.2	25,394.4
Aug. . . .	111,905.0	106,222.2	5,682.8	3,376.4	15,740.2	18,062.7	30,244.2	3,841.8	15,327.8	25,311.9
Sept. . . .	113,392.1	107,821,5	5,570.6	3,402.8	15,743.6	18,335.8	30,832.5	3,865.3	15,722.9	25,489.2
Oct	114,868.1	109,490.1	5,378.0	3,397.8	15,988.2	18,687.8	31,404.7	3,987.5	16,114.1	25,288.0
Nov. . . .	115,636.5	110,275.4	5,361.1	3,303.2	15,755.2	18,612.8	32,138.9	3,930.4	16,580.3	25,315.7
Dec. . . .	117,201.7	111,951.1	5,250.6	3,248.0	15,675.6	18,821.6	33,126.8	4,040.0	17,053.8	25,235.9
2005 Jan.	118,387.3	112,849.1	5,538.2	3,237.8	15,645.2	18,921.1	33,672.4	4,079.3	17,275.8	25,555.7
Feb.	118,906.4	113,426.3	5,480.1	3,161.6	15,623.8	19,104.7	34,281.6	4,129.9	17,610.7	24,994.1
March . .	120,704.9	114,825.5	5,879.4	3,079.3	15,565.9	19,309.8	35,091.5	4,180.8	17,995.6	25,482.0
Apr.	123,037.2	117,015.9	6,021.3	3,059.3	15,926.1	19,565.9	35,878.7	4,211.2	18,550.0	25,846.0
May . . .	124,228.8	118,054.2	6,174.6	3,038.1	15,872.9	19,520.5	36,610.2	4,225.7	18,896.4	26,065.0
June . . .	125,452.3	119,070.9	6,381.4	3,096.1	15,918.8	20,142.8	36,102.8	4,293.7	19,386.6	26,511.5
July	127,215.3	120,827.5	6,387.8	3,119.2	16,123.2	20,352.3	37,238.6	4,135.7	18,897.0	27,349.3
Aug. . . .	127,788.5	121,323.1	6,465.4	3,123.3	15,838.2	20,027.5	37,850.0	4,110.4	19,245.1	27,594.0
Sept. . . .	129,507.9	123,157.5	6,350.4	2,939.4	15,674.2	19,985.6	39,022.1	4,073.7	19,628.5	28,184.4
Oct. . . .	131,111.7	124,806.1	6,305.6	2,884.1	15,757.2	19,905.6	40,000.4	4,089.4	20,080.7	28,394.3
Nov. . . .	133,136.0	126,444.5	6,691.5	2,919.6	15,712.5	19,717.1	41,244.2	4,184.2	20,511.7	28,846.7
Dec. . . .	136,981.1	130,273.5	6,707.6	2,954.0	15,753.8	19,958.4	43,199.4	4,189.8	20,850.0	30,075.7

1 Comprising manufacturing and mining.
Source: Bank of Greece.

Table III.5
ECB and Bank of Greece interest rates

(Percentages per annum)

1. ECB interest rates				2. Bank of Greece interest rates				
With effect from[1]	Deposit facility	Main refinancing operations[3]	Marginal lending facility	With effect from	Overnight deposit facility, first tier[4]	Overnight deposit facility, second tier[4]	14-day intervention rate	Lombard rate
1999 1 Jan.	2.00	3.00	4.50	**1999** 14 Jan.	11.50	9.75	12.00	13.50
4 Jan.[2]	2.75	3.00	3.25	21 Oct.	11.00	9.75	11.50	13.00
22 Jan.	2.00	3.00	4.50	16 Dec.	10.25	9.25	10.75	12.25
9 Apr.	1.50	2.50	3.50	27 Dec.	10.25	9.00	10.75	11.50
5 Nov.	2.00	3.00	4.00					
2000 4 Feb.	2.25	3.25	4.25	**2000** 27 Jan.	9.50	8.50	9.75	11.00
17 March	2.50	3.50	4.50	9 March	8.75	8.00	9.25	10.25
28 Apr.	2.75	3.75	4.75	20 Apr.	8.00	7.50	8.75	9.50
9 June	3.25	4.25	5.25	29 June	7.25	–	8.25	9.00
28 June[3]	3.25	4.25	5.25	6 Sept.	6.50	–	7.50	8.25
1 Sept.	3.50	4.50	5.50	15 Nov.	6.00	–	7.00	7.75
6 Oct.	3.75	4.75	5.75	29 Nov.	5.50	–	6.50	7.25
				13 Dec.	4.75	–	5.75	6.50
				27 Dec.	3.75	–	4.75	5.75
2001 11 May	3.50	4.50	5.50					
31 Aug.	3.25	4.25	5.25					
18 Sept.	2.75	3.75	4.75					
9 Nov.	2.25	3.25	4.25					
2002 6 Dec.	1.75	2.75	3.75					
2003 7 March	1.50	2.50	3.50					
6 June	1.00	2.00	3.00					
2005 6 Dec.	1.25	2.25	3.25					

1 The date refers to the deposit and marginal lending facilities. For main refinancing operations, unless otherwise indicated, changes in the rate are effective from the first operation following the date indicated. The change on 18 September 2001 was effective on that same day.

2 On 22 December 1998 the ECB announced that, as an exception measure between 4 and 21 January 1999, a narrow corridor of 50 basic points would be applied between the interest rate for the marginal lending facility and that for the deposit facility, aimed at facilitating the transition of market participants to the new regime.

3 Until 21 June 2000: fixed-rate tenders, from 28 June 2000: minimum bid rate in variable rate tenders.

4 On 29 June 2000 the second tier of the deposit facility was abolished; the interest rate thereafter applies to the unified deposit acceptance account.

Sources: ECB and Bank of Greece.

Table III.6
Greek government paper yields

(Percentages per annum, period averages)

Period	Yield on one-year Treasury bills	Yield on government bonds						
		3-year	5-year	7-year	10-year	15-year	20-year	32-year
2001	4.08	4.28	4.58	4.82	5.30	5.51	5.76	. . .
2002	3.50	4.06	4.45	4.78	5.12	5.24	5.52	. . .
2003	2.34	2.82	3.37	3.83	4.27	4.32	4.91	. . .
2004	2.27	2.87	3.37	3.81	4.26	4.53	4.77	. . .
2005	2.33	2.65	2.92	3.22	3.59	3.80	3.92	4.14
2003 Jan.	2.70	2.91	3.36	3.81	4.43	4.51	4.97	. . .
Feb.	2.50	2.65	3.31	3.89	4.24	4.27	4.83	. . .
March	2.41	2.82	3.38	3.83	4.26	4.33	4.90	. . .
Apr.	2.46	2.99	3.50	3.96	4.38	4.45	5.02	. . .
May	2.25	2.64	3.12	3.57	4.02	4.09	4.73	. . .
June	2.02	2.38	2.88	3.33	3.81	3.86	4.57	. . .
July	2.08	2.62	3.18	3.65	4.12	4.16	4.83	. . .
Aug.	2.28	2.98	3.51	3.91	4.29	4.34	4.90	. . .
Sept.	2.26	2.91	3.47	3.91	4.32	4.37	4.96	. . .
Oct.	2.30	2.94	3.52	3.95	4.38	4.43	5.02	. . .
Nov.	2.41	3.06	3.67	4.09	4.51	4.55	5.10	. . .
Dec.	2.38	2.97	3.58	4.02	4.45	4.49	5.04	. . .
2004 Jan.	2.21	2.71	3.34	3.81	4.37	4.33	4.94	. . .
Feb.	2.17	2.91	3.28	3.90	4.35	4.28	4.91	. . .
March	2.06	2.71	3.26	3.71	4.17	4.43	4.75	. . .
Apr.	2.16	2.90	3.45	3.90	4.35	4.72	4.88	. . .
May	2.30	3.08	3.63	4.07	4.49	4.86	5.01	. . .
June	2.41	3.19	3.73	4.15	4.55	4.89	5.03	. . .
July	2.36	3.07	3.61	4.03	4.44	4.79	4.93	. . .
Aug.	2.30	2.91	3.43	3.85	4.28	4.63	4.78	. . .
Sept.	2.37	2.91	3.40	3.79	4.22	4.56	4.70	. . .
Oct.	2.32	2.76	3.25	3.65	4.11	4.47	4.61	. . .
Nov.	2.33	2.66	3.12	3.53	3.97	4.33	4.47	. . .
Dec.	2.30	2.59	2.98	3.36	3.77	4.10	4.24	. . .
2005 Jan.	2.31	2.72	2.96	3.29	3.69	3.99	4.12	. . .
Feb.	2.31	2.80	2.97	3.34	3.69	3.94	4.04	. . .
March	2.34	2.88	3.06	3.56	3.92	4.12	4.24	4.49
Apr.	2.27	2.70	3.06	3.37	3.76	3.98	4.11	4.38
May	2.19	2.55	2.89	3.21	3.60	3.82	3.95	4.21
June	2.10	2.35	2.70	3.02	3.44	3.66	3.79	4.05
July	2.17	2.42	2.75	3.06	3.46	3.71	3.84	4.10
Aug.	2.22	2.49	2.79	3.07	3.47	3.69	3.82	4.08
Sept.	2.22	2.42	2.66	2.92	3.30	3.52	3.64	3.91
Oct.	2.41	2.66	2.88	3.11	3.45	3.64	3.75	4.00
Nov.	2.69	2.91	3.15	3.36	3.67	3.84	3.94	4.14
Dec.	2.78	2.95	3.14	3.31	3.57	3.73	3.82	4.02

Source: Bank of Greece.

Table III.7

Greece: bank rates on new euro-denominated deposits of euro area residents

(Percentages per annum, period averages, unless otherwise indicated)

Period	Deposits by households			Deposits by non-financial corporations		Repurchase agreements (repos)
	Overnight[1,2]	Savings[2]	With an agreed maturity of up to 1 year	Overnight[2]	With an agreed maturity of up to 1 year	
2003	0.93	0.92	2.48	0.63	2.49	2.24
2004	0.91	0.90	2.29	0.55	2.17	1.98
2005	0.91	0.88	2.23	0.60	2.09	2.00
2003 Jan.	1.10	1.09	2.83	0.74	2.88	2.75
Feb.	1.10	1.10	2.73	0.75	2.79	2.71
March	1.06	1.05	2.68	0.69	2.40	2.54
Apr.	1.05	1.04	2.70	0.73	2.67	2.46
May	1.04	1.03	2.61	0.70	2.66	2.45
June	0.82	0.81	2.44	0.55	2.41	2.10
July	0.80	0.79	2.38	0.60	2.36	2.04
Aug.	0.81	0.79	2.29	0.52	2.31	2.00
Sept.	0.81	0.80	2.30	0.55	2.30	1.98
Oct.	0.87	0.85	2.27	0.62	2.37	1.98
Nov.	0.87	0.85	2.29	0.54	2.33	1.94
Dec.	0.87	0.86	2.22	0.59	2.35	1.98
2004 Jan.	0.88	0.86	2.26	0.55	2.18	1.99
Feb.	0.88	0.87	2.18	0.57	2.17	1.98
March	0.89	0.87	2.29	0.54	2.13	1.95
Apr.	0.89	0.88	2.26	0.56	2.13	1.97
May	0.90	0.89	2.24	0.56	2.23	1.95
June	0.91	0.90	2.29	0.54	2.16	1.97
July	0.91	0.91	2.32	0.56	2.18	1.97
Aug.	0.92	0.91	2.31	0.60	2.19	1.96
Sept.	0.93	0.92	2.33	0.53	2.12	1.97
Oct.	0.94	0.93	2.35	0.53	2.17	1.98
Nov.	0.95	0.94	2.36	0.51	2.18	2.00
Dec.	0.96	0.94	2.30	0.55	2.20	2.01
2005 Jan.	0.96	0.95	2.25	0.56	2.08	1.97
Feb.	0.95	0.94	2.19	0.55	2.07	1.97
March	0.93	0.91	2.22	0.55	2.02	1.97
Apr.	0.89	0.86	2.22	0.55	2.07	1.98
May	0.89	0.87	2.20	0.56	2.04	1.99
June	0.89	0.86	2.21	0.58	2.07	1.99
July	0.88	0.86	2.20	0.60	2.07	1.98
Aug.	0.89	0.86	2.19	0.59	2.08	1.98
Sept.	0.89	0.87	2.19	0.70	2.09	1.98
Oct.	0.89	0.87	2.22	0.65	2.10	1.97
Nov.	0.90	0.87	2.27	0.65	2.11	1.99
Dec.	0.91	0.88	2.39	0.71	2.32	2.18

1 Weighted average of the current account rate and the savings deposit rate.

2 End-of-month rate.

Source: Bank of Greece.

Table III.8

Greece: bank rates on new euro-denominated loans to euro area residents

(Percentages per annum, period averages, unless otherwise indicated)

Period	Loans to households[1]					Loans to non-financial corporations[1]		
		Consumer loans		Housing loans			With a floating rate or an initial rate fixation of up to 1 year	
	Loans without defined maturity [2,3]	With a floating rate or an initial rate fixation of up to 1 year	Average rate on total consumer loans	With a floating rate or an initial rate fixation of up to 1 year	Average rate on total housing loans	Loans without defined maturity [3,4]	Up to €1 million	Over €1 million
2003	14.41	10.57	10.47	4.51	4.78	6.86	5.29	3.98
2004	13.81	9.55	9.86	4.30	4.51	7.01	4.98	3.67
2005	13.36	8.47	9.06	4.06	4.15	6.90	5.08	3.62
2003 Jan.	14.71	10.46	10.17	4.53	4.77	7.15	5.53	4.39
Feb.	14.68	11.13	10.60	4.58	4.81	7.09	5.59	4.27
March	14.66	10.82	10.76	4.58	4.87	7.04	5.37	4.06
Apr.	14.76	11.15	10.82	4.58	4.93	7.07	5.55	4.14
May	14.58	11.13	10.70	4.59	4.93	6.95	5.68	3.76
June	14.54	10.61	10.44	4.53	4.86	6.84	5.15	3.47
July	14.24	10.41	10.33	4.37	4.66	6.70	5.06	3.68
Aug.	14.05	10.24	10.37	4.48	4.76	6.67	4.95	3.60
Sept.	14.14	10.37	10.60	4.62	4.81	6.67	5.14	4.27
Oct.	14.22	10.57	10.58	4.57	4.81	6.68	5.24	4.68
Nov.	14.27	10.36	10.46	4.35	4.63	6.72	5.14	3.66
Dec.	14.08	9.60	9.86	4.31	4.53	6.78	5.13	3.78
2004 Jan.	13.92	9.82	9.94	4.36	4.68	6.74	5.12	3.92
Feb.	13.97	9.94	9.99	4.35	4.63	6.85	5.16	4.09
March	14.00	9.44	9.87	4.37	4.63	7.13	4.88	3.45
Apr.	14.06	9.56	9.85	4.36	4.55	7.11	5.15	3.49
May	13.79	9.82	10.07	4.33	4.54	7.02	4.91	3.45
June	13.89	9.71	10.05	4.30	4.54	7.06	4.89	3.58
July	13.84	9.60	9.67	4.24	4.43	7.03	4.84	3.53
Aug.	13.77	9.70	10.05	4.34	4.53	7.06	4.95	3.52
Sept.	13.62	9.37	9.91	4.23	4.43	7.05	4.87	3.80
Oct.	13.72	9.68	9.87	4.29	4.45	7.02	4.86	3.83
Nov.	13.75	9.40	9.72	4.23	4.36	7.05	5.06	3.61
Dec.	13.41	8.58	9.36	4.21	4.37	6.97	5.04	3.77
2005 Jan.	13.42	8.85	9.39	4.23	4.39	6.95	4.89	3.54
Feb.	13.72	8.99	9.62	4.20	4.34	6.95	5.08	3.53
March	13.51	8.53	9.43	4.15	4.27	6.94	5.00	3.70
Apr.	13.74	8.58	9.37	4.13	4.23	6.94	5.09	3.58
May	13.63	8.88	9.13	4.12	4.21	6.89	4.96	3.47
June	13.48	8.16	8.78	4.07	4.18	6.87	4.82	3.46
July	13.14	8.45	9.35	4.06	4.14	6.82	5.01	3.50
Aug.	13.16	8.48	9.39	4.11	4.18	6.84	5.12	3.50
Sept.	13.23	8.36	8.79	3.99	4.05	6.82	5.06	3.57
Oct.	13.07	8.32	8.68	3.94	4.01	6.85	5.06	3.79
Nov.	13.09	8.28	8.56	3.88	3.93	6.93	5.41	3.84
Dec.	13.07	7.78	8.26	3.86	3.91	7.00	5.41	3.93

1 Charges are not included.

2 Weighted average of interest rates on loans to households through credit cards, open loans and current account overdrafts.

3 End-of-month rate.

4 Weighted average of interest rates on corporate loans through credit lines and sight deposit overdrafts.

Source: Bank of Greece.

Table IV.1

Net borrowing requirement of central government on a cash basis[1,2,3]

(Million euro)

	Years		January - November		
	2003	2004	2003	2004	2005*
Central government	**10,526**	**15,605**	**8,040**	**12,639**	**12,320**
– State budget	10,833	15,377	8,981	13,175	13,038
(Ordinary budget)[4]	4,106	8,841	2,992	7,698	10,039[6]
(Public investment budget)	6,727	6,536	5,989	5,477	2,999
– OPEKEPE[5]	–307	228	–941	–536	–718
Percentage of GDP	**6.8**	**9.3**	**5.2**	**7.6**	**6.8**

1 This table will henceforth show the borrowing requirement of central government on a cash basis. The borrowing requirement of public organisations is calculated by the NSSG on the basis of detailed data collected directly from these entities, in the framework of a special quarterly survey concerning their financial results (revenue-expenditure) and their financial situation (loans, investment in securities, deposits etc.).

2 As shown by the movement of relevant accounts with the Bank of Greece and credit institutions.

3 Excluding the repayment of debts of the Greek government to the Social Insurance Institute (IKA) through bond issuance (Law 2972/2001, Article 51). These debts amounted to €3,927.9 million and were repaid in three instalments (2002: €1,467.4 million, 2003: €1,549.5 million and 2004: €911 million).

4 Including the movement of public debt management accounts.

5 Payment and Control Agency for Guidance and Guarantee Community Aid. It replaced DIDAGEP (Agricultural Markets Management Service) as of 3 September 2001.

6 Including the subsidisation of hospitals with about €2,542 million and expenditure for the capital increase (by €1,028.5 million) of the Agricultural Bank of Greece. Also including receipts of €1,090 million from the sale of 16,4% of OPAP shares and €826 million from the sale of 10% of OTE shares.

* Provisional data and estimates.

Source: Bank of Greece.

Table IV.2
Financing of borrowing requirement of central government
(Million euro)

	Years				January - November					
	2003		2004		2003		2004		2005*	
	Amount	Percentage of total	Amount	Percentage of total	Amount	Percentage of total	Amount	Percentage of total	Amount	Percentage of total
Treasury bills and government bonds[1,2]	13,378	127.1	16,829	107.8	14,526	180.7	16,262	128.7	17,674	143.5
Change in balances of central government accounts with the credit system[3]	–871	–8.3	–901	–5.8	–4,817	–59.9	–3,769	–29.8	–6,424	–52.1
External borrowing[4]	–1,981	–18.8	–323	–2.1	–1,669	–20.8	146	1.2	1,070	8.7
Total	**10,526**	**100.0**	**15,605**	**100.0**	**8,040**	**100.0**	**12,639**	**100.0**	**112,320**	**100.0**

1 Comprising domestically issued Treasury bills and government bonds as well as bonds convertible into equity.
2 Excluding government bond issuance for the repayment of debts to IKA (Law 2972/2001, Article 51). Also see footnote 3 in Table IV.1.
3 Including changes in central government accounts with the Bank of Greece and other credit institutions, as well as the change in the OPEKEPE account.
4 Comprising government borrowing abroad and securities issuance abroad, as well as the change in government deposits with foreign banks. Excluding non-residents' holdings of domestically issued government bonds.
* Provisional data.
Source: Bank of Greece.

Table IV.3
State Budget results
(Million euro)

	Year			Percentage change		January - November			Percentage change	
	2004	2005*	Budget for 2006	2005*/04	Budget for 2006/05*	2003	2004	2005*	2004/03	2005*/04
I. REVENUE[1]	44,949	47,248	52,240[4]	5.1	10.6	37,201	40,190	42,303	8.0	5.3
1. Ordinary budget	42,055	44,170	48,750[4]	5.0	10.4	35,980	37,964	40,028	5.5	5.4
2. Public investment budget	2,894	3,078	3,490	6.4	13.4	1,221	2,226	2,275	82.3	2.2
(Own revenue)	83	80	90	–3.6	12.5	...	...	...	–	–
(Revenue from the EU)	2,811	2,998	3,400	6.7	13.4	...	...	...	–	–
II. EXPENDITURE[1]	57,810	57,884	60,790	0.1	5.0	45,878	50,826	50,166	10.8	–1.3
1.1 Ordinary budget	48,288	50,184	52,390	3.9	4.4	38,530	42,989	44,840	11.6	4.3
(Interest payments and other expenditure)[2]	9,464	9,730	9,600	2.8	–1.3	8,635	9,171	9,491	6.2	3.5
1.2 Ordinary budget primary expenditure	38,824	40,454	42,790	4.2	5.8	29,895	33,818	35,349	13.1	4.5
2. Public investment budget	9,522	7,700	8,400	–19.1	9.1	7,348	7,837	5,326	6.7	–32.0
III. STATE BUDGET RESULTS	–12,861[3]	–10,636	–8,550[4]			–8,677	–10,636	–7,863		
Percentage of GDP	–7.7	–5.9	–4.4			–5.6	–6.4	–4.4		
1. Ordinary budget	–6,233	–6,014	–3,640			–2,550	5,025	–4,812		
2. Public investment budget	–6,628	–4,622	–4,910			–6,127	–5,611	–3,051		
IV. PRIMARY SURPLUS	–3,397	–906	1,050			–42	–1,465	1,628		
Percentage of GDP	–2.0	–0.5	0.5			0.0	–0.9	–0.9		
AMORTISATION PAYMENTS[2]	20,356	21,767	18,136	6.9	–16.7	19,435	18,190	19,140	–6.4	5.2
MINISTRY OF NATIONAL DEFENCE PROGRAMMES FOR THE PROCUREMENT OF MILITARY EQUIPMENT[2]	1,792	1,400	1,500	–21.9	7.1	581	569	817	–2.1	43.6

1 For comparability purposes, tax refunds are included in expenditure and have not been deducted from revenue.
2 From 2003 onwards, such payments are recorded in the off-budget item "Ministry of National Defence Programmes for the procurement of military equipment".
3 Including a grant of €220 million to OTE's personnel insurance fund (TAP-OTE).
4 Including extraordinary receipts of €1,000 million from dividend yields, assignment of State rights and settlement of income of the National Telecommunications and Post Commission.
* Provisional data.
Source: General Accounting Office.

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